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Great deeds are done and great discoveries made."

POPE'S '*Homer*.'

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"Now, we proceed from the standpoint of the systematic zoologist; taking in succession each of the families with which we deal and giving an account of the distribution, both of the entire family and as far as practicable of each of the genera of which it is composed."—ALFRED RUSSEL WALLACE.



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THE SEASON OF 1885 IN IRELAND.

BY W. F. DE V. KANE, F.E.S.

My experience as an entomologist of the past season may be worth recording, for the sake of comparison with that of English *confrères*.

The summer of 1884 having been genial, and with a larger amount of sunshine than has been vouchsafed us for many years past, I reckoned upon an abundant harvest of Lepidoptera as a result; but in this my expectations have been falsified, at least so far as successful captures are concerned.

The salallows came into bloom rather later than usual,—about the first week in April; and about the middle of the month I found myself in Killarney. I could not complain of the scarcity of *Tæniocampæ* or hybernated *Noctuæ* of various species, nor of the various *Geometræ* which were to be beaten out or taken at rest in the daytime; the month being unusually mild, so much so that during the visit of the Prince and Princess of Wales to these lakes we were favoured with truly “royal weather,” the sun being very powerful. *Apropos* of their Royal Highnesses’ visit, an event which aroused an excitement here, proportioned, alas, to its rarity, I may perhaps be allowed to refer to a description given in the London ‘Standard’ and the Dublin ‘Freemason’s Journal,’ in which, by way of adding to the vivacity of their narrative, describing the progress of the royal party down the Upper Lake, they recorded, with striking and suggestive unanimity, that when the boats were arriving at the landing-

place, at Derrycunihy waterfall, an enthusiastic entomologist was to be seen up to his waist in the water, waving a huge net, utterly regardless of the presence of the distinguished visitors. Now as your correspondent happened to be present on the occasion in question, and neither carried a net nor saw anyone else with one, he must be pardoned for saying that the whole incident was developed out of the inner consciousness of the gentleman of the press who wrote the account. He doubtless learned from the gamekeeper that an entomologist was one of a small knot of persons who attended the arrival of the royal party; and the description represents what he thought would be appropriate conduct for one of so crack-brained a confraternity. The water must have been cold, however, for agreeable wading.

This warm weather, coupled with some rainfall about the 20th, hastened the vegetation, which was hitherto retarded, so that in a day or two the birch trees burst into leaf. In spite of the wet I remained till the 25th, and made a very fair collection, *Boarmia cinctaria* being the chief species sought for. Again on June 8th I revisited Killarney, and stayed three weeks, bringing a tent with me, which was suspended from the bough of an oak growing hard by the lodge of one of Lord Kinmare's gamekeepers, and close to the road which skirts the shores of the Upper Lake. More than one naturalist has been fain to content himself with the rough accommodation of Tower Lodge, the intelligent and kindly inmates of which I shall always remember with pleasure, as worthy examples of that genial hospitality and true refinement of sentiment which so often distinguish the better class of the Irish peasantry. Behind was a park-like glade, wooded with stately oaks, under whose shade ran a clear stream, which, rising from its sources among the heights of the Crom-a-Glaun Mountain, crept down through heather and brake, past cliff and scaur, until, leaping headlong over a picturesque precipice, it fell into the valley. The sound of this cascade filled the ear at night; and in the early dawn the red deer used to come and drink, and stare at the new addition to their scenery which I had erected. The country people, too, wondered much at it. Some thought it for the illicit sale of "refreshments;" others that it was connected in some way with photography; while my host roguishly explained to all enquirers that it was a Land League hut!

Utterly disloyal and imbued with communistic ideas as the Kerry men are,—and who can expect otherwise from the kind of newspapers that they read and believe in,—I was delighted to find that the great majority of the older generation are as kindly disposed and as naturally well-bred as the Irish of the west and south generally used to be in olden days, so that the naturalist or artist may freely trust himself among them in the wildest portions of the country. Nevertheless I should advise circumspection in choosing one's quarters. But I have wandered rather far from my subject.

The month of June was very fine and sunny, but I soon found that, let the weather be what it might in the daytime, at sunset the north-east wind, which was most persistent, made itself felt; and no Lepidoptera flew, or could be attracted to flowers, sugar, or light, with the exception of a few *Demas coryli*, *Arctia menthastri*, and a few common Noctuæ at sugar in the heart of the forest. Such pupæ as I had from the preceding year hatched out, however, in due course, perhaps a little late; so that I was driven to the conclusion that moths must have been at least normally plentiful. In the daylight, however, I had fair success at beating out Geometers; and such butterflies as frequent those parts were plentiful, as *Thecla rubi*, *Euchloë cardamines*, *Argynnis paphia*, &c. This experience was fully borne out by Mr. Willets, of Sheffield, who was collecting at Markree Castle, Co. Sligo. He was utterly at fault in the months of May, June, and July, not taking a single one of several species of Noctuæ, with which last year he had filled his boxes in the same woods; nor had he, as I had, any success with Geometers and day-flying moths, for which I cannot account by meteorological causes. I need not, therefore, explain that I was unsuccessful in meeting with *Notodonta bicolor*, an example of which was taken here many years ago by Bouchard, then in the employment of the Natural History Department of the British Museum. A report is spread also that some two summers since a specimen was found by a labourer, and sold for ten shillings to a naturalist then staying at a hotel in Killarney, who inserted a note of his acquisition in some magazine or serial. Can any reader of the 'Entomologist' verify this, so that the occurrence of this rare species in Kerry may be further authenticated? Bouchard's insect seems to be well remembered there, as I have

frequently been asked by men of the neighbourhood whether I knew "*bicolorum*," and had captured it yet.

In July matters changed slightly for the better, but I had gone to a locality on the west coast, whose immediate neighbourhood was not prolific of any varieties, though I took a few *Plusia bractea*. This species I hear was rarer than usual in its accustomed haunts.

From the close of June to the present the emergence of Lepidoptera has been strikingly in arrear; and although the summer was remarkable for its sunshine, yet insects were from a fortnight to three weeks late in appearance. In fact I met with a series of disappointments thereby, when from time to time I went to search for a well-known species in their known localities at the usual season, or a little later. *Bankia argentula*, *Erastria fasciana* (*fuscula*), *Eupithecia debiliata*, *Emmelesia tæniata*, and *Noctua dahlia* all more or less played me false. Of the latter, for instance, last year I found none in good condition on August 25th, while on September 9th ult. I captured a number, of which about half were fresh and in good order.

In September I spent a short time at Markree Castle, Co. Sligo, and from thence visited for a few days at Colonel Cooper's Shooting Lodge, on the Oxhill Mountains. The local insects in both localities seemed to be in normal abundance, and in the latter I noticed a surprising abundance (among other commoner species) of *Celæna haworthii*, some of which were still (about the 20th) in fair order; also of *Tapinostola fulva*. I was in hopes also of finding *Phibalapteryx lapidata* there, as it occurs on the moors west of Ballina, and has most likely a wide range. However I was not so fortunate, and was only able to meet with two specimens in the latter locality, in which they were first discovered by my friend, Mr. Fetherstonhaugh, many years ago. The weather was windy and sunless; and under these circumstances it is a mere chance to meet with this insect, which is a shy and very feeble flyer. Can anyone tell me whether they are to be taken in May, and if so about what portion of the month?

The phenomenal appearance of rare Sphingidæ and *Colias edusa* in England this year, as recorded in the 'Entomologist,' seems not to have been without a parallel on this side of the Channel, but to what comparative extent it is impossible to say

for want of observers here. However the following notes may be worth recording as a contribution :—*Sphinx convolvuli* was taken in the west by Mr. Russ, of Culleenamore, near Sligo, and by myself near Crossmolina, Co. Mayo; and in the extreme south by Mr. Charles Donovan, of Glandora, Co. Cork. *Acherontia atropos* also turned up in Killarney and elsewhere. *Macroglossa stellatarum* has been unusually plentiful about Dublin and in other counties, but very late in autumn. A few specimens of *Colias edusa* were seen in Co. Waterford and Wexford, and doubtless it occurred elsewhere; so perhaps we may have a flight of them next year.

To sum up. After a backward and late spring, a week's warm sunshine in April brought out foliage and insects suddenly; but upon this a continuance of north-easterly winds throughout the summer, which was unusually warm and sunny, reduced the temperature suddenly at nightfall, so that diurnal Lepidoptera were plentiful, though somewhat late; but night-flying species were scarcely to be met with, though probably as numerous as usual. Later on towards autumn sugar and flowers regained their attractiveness, and ivy-bloom has been a success, though I think *Xylina socia* (*petrificata*) is rarer than usual; but the usual dates of emergence seem to have been retarded, without exception, about a fortnight or three weeks.

Killarney, November 9, 1885.

SOME OBSERVATIONS ON *LYCÆNA ARGIADES*.

BY RICHARD SOUTH, F.E.S.

THE discovery of a new butterfly in England is an event of considerable interest, and worthy of more than passing notice. As far as we know at the present moment, only five specimens have been taken in England; two by Mr. Pickard-Cambridge, or rather by his sons. These were taken on Bloxworth Heath, near Wareham, in Dorsetshire. The first example, a female, was captured on August 18th, and the second, a male, was found on almost the same spot on August 20th (Entom. xviii. 249). Mr. Philip Tudor took a specimen near Bournemouth on August 21st (Entom. xviii. 252). This locality is fourteen miles distant from

Bloxworth Heath. Two other specimens have been detected by the Rev. J. S. St. John, of Whatley Rectory, Frome, Somersetshire, among a small collection of Lepidoptera he had obtained from a gentleman in his parish (*vide* Entom. xviii. 292). These last two specimens of *L. argiades* it appears were taken "with several others" eleven years ago, that is, in 1874, close by a small quarry not two miles from the Rectory. Roughly speaking, Frome is distant from Wareham about forty miles as the crow flies.

Is *Lycæna argiades* indigenous? or is its occurrence in England due to recent immigration? or to the conscious or unconscious agency of man? Whilst admitting the possibility of either of the latter contingencies, I incline to the opinion that *L. argiades* is a true native, and that it came into this country with such species as *L. bellargus* and *L. corydon* during the middle post-glacial epoch, at which period of time our islands had extensive land-connection with the Continent of Europe. It is probable, however, that *L. bellargus* and *L. corydon* were both somewhat in advance of *L. argiades*, and that all three were long preceded, perhaps in early post-glacial times, by *L. icarus* and *L. ægon*. Later on, when our islands became again separated from the Continent of Europe and the climate became colder, *L. argiades* would, supposing it to have spread over England, be driven, together with its congeners (except, perhaps, *L. icarus* and *L. ægon*), southwards.

During the geological period known as the late post-glacial epoch, various animals and plants which had come in from Central and South Europe in the middle post-glacial era, and had extended themselves northwards, would now by reason of the cold be compelled to retreat southwards. They would not be able to return to the Continent because of the sea-barriers. Under these circumstances many species would be destroyed, and others continue a precarious existence on the most southern limits of our shores, where they would be brought into severe competition one with another. *L. argiades* was probably one of those that just succeeded in holding their own until the return of a warmer period. When the climate became more genial this species would have to continue the struggle for existence, and it would find its stronger competitors among its near allies. Being the weaker species, it probably was never able to form such colonies in the South of England as *L. bellargus* and *L. corydon* have done, but,

on the contrary, barely managed to linger on in one or two favourable spots, where it still exists as a waning remnant of the original stock.

It is probable that this species occupies other exceedingly small holdings in our south-western counties than those to which reference has been made, but it is also probable that it does not enjoy the undisputed possession of such holdings. Some one or other of its congeners will still endeavour to crowd it out.

My view regarding the origin of *Lycæna argiades* in England is necessarily of a speculative character, but the present known distribution of the species is the basis upon which I have founded that view. On the Continent *L. argiades* has a range co-extensive with that of *L. bellargus* and *L. corydon*. This being the case, there does not appear to be any great improbability in supposing that when *L. bellargus* and *L. corydon* extended their range into England so also did *L. argiades*. Why this last species is not now so abundant in England as its co-migrant I have endeavoured to show.

I should add that the individuals of the first, or spring, brood of *Lycæna argiades* are smaller than those of the second, and, where it occurs, third brood. This form has been named *poly-sperchon*. There is also a variety occurring with the type, and differing therefrom in the absence of the orange spots of the under sides. It is named *coretas*.

Mr. Pickard-Cambridge informs us that when on the wing *L. argiades* is very like "a slightly worn or dull example of *L. icarus*" on the one hand, and typical *L. ægon* on the other. On a closer examination the only "blue" occurring in England with which it is likely to be confounded is *Lycæna bætica*.

In considering the probable origin of *L. bætica* in Britain, I attach, as in the case of *L. argiades*, primary importance to the present geographical distribution of the species. It is found throughout Africa, but more particularly North and South; at the Cape of Good Hope it is very common. From Africa the range extends north and west everywhere south of the Alps, and eastwards through Western Asia into Central India. Occasionally it is found in places outside these limits, as, for instance, in the Islands of Madeira and Ascension, Switzerland, Germany, Belgium, the North of France, the Channel Islands, and also in England.

The first record we have of the occurrence of *L. bætica* in England is that of a specimen taken at Brighton in 1859. Since that time four other examples have been recorded, the latest being one at Bournemouth in 1882.

Looking at the fact that this species is not, except in rare instances, found far north of the Alps, I am inclined to think that its introduction into England took place in recent times.

There are three other species of *Lycæna* with tail-like appendages occurring in Europe, viz., *L. telicanus*, found in the South of Europe, North and South Africa, and Western Asia; it is, however, more particularly confined to those countries which have a Mediterranean sea-board. *L. balcanica* in Turkey, Western Asia, and Persia; Dr. Lang says this insect is very closely allied to the African *L. theophrastus*. *L. fischeri* inhabits the steppes of South-east Russia, and dry meadows in the Ural Mountains and the Altai. This species is rare, and has very minute tails.

12, Abbey Gardens, St. John's Wood, London, N.W., Dec., 1885.

DIPTERA BRED FROM THE PUPÆ IN 1885.

BY PETER INCHBALD, F.Z.S., F.E.S.

I HAVE not much to tell of, relative to the rearing of Diptera in 1885, and yet there are some of your readers that may possibly be interested in these scanty gleanings from the field of Nature. Each personal observation, indeed, when duly studied and investigated, must carry some weight with it.

Every one knows and admires the red campion (*Lychnis dioica*) of our hedgerows. It is often in flower till quite late in the year. Its leaves feed the larva of a dipterous miner (*Agromyza flavifrons*, Meigen.) A conspicuous white blotch on the upper side of the leaf reveals the miner and his work. Sometimes, indeed, the parenchyma of the whole leaf is consumed by the ravenous larva. When full-fed it eats its way out of the leaf, and pupates in the soil, or among the dead leaves below. The pupa-case is shining brown. The first generation appears in July, and a second brood generally follows later in the year. The fly is shining black, and, as its specific name implies, is con-

spicuous for its ochreous-yellow head. The ovipositor, as Kalt-enbach rightly observes, "is short in proportion to its body, scarcely exceeding the length of the last abdominal ring."

Phorbia floricola, Zetterstedt, is my next hatch. This fly feeds in the larva-state on the marsh ragwort (*Senecio aquaticus*) in May and June, consuming the pulp of the receptacle, and converting it into a discoloured mass. The receptacle, indeed, is completely hollowed out by the feeding of the larva, which is found singly within the void. It pupates within, and appears in July, or even earlier. The particulars of its feeding become interesting, the more so, as Dr. Meade says that the "life-history of the Anthomyidæ is but imperfectly understood." The disproportion of the sexes, likewise, is singular, the female vastly predominating; indeed, I only bred *one* male; all the rest were females. It requires a practised eye to detect the existence of the larva within the flower-head, as the evidence of its feeding is not outwardly very visible.

The habits of the larva of *Phytomyza lateralis*, Meigen, are very like those of *Phorbia floricola*. It, too, feeds within the receptacle of the wild chamomile (*Matricaria inodora*), so common on the borders of our cornfields in the summer. Each flower-head mostly contains a single larva, though occasionally I find two. Its nesting-place in the receptacle is not so hidden as is the case in the last-mentioned fly. A dark spot among the disk-florets usually betrays its existence. The flies are very common; I bred them in considerable numbers—both sexes—during the first week in August. The fly is double-brooded, as I reared them again in October. The yellow lateral line makes the lively little fly easy to recognise. Kaltenbach states that the "larva feeds" on the unripe seeds. This is not my experience, though our food-plants are identical. He mentions further, that it feeds in the stems of the nettle and vervain—doubtless in these cases on the pulp!

Those who have had the advantage of seeing Loew's splendid work on the 'European Trypetidæ,' and the wonderful wings he has photographed, will enter into the pleasure one feels in rearing these bar-winged flies from the larvæ, and tracing a portion of their life-history, by ascertaining the plant that feeds and protects them in their earlier and more helpless stages of growth. Loew figures 121 European species. Of these we

may possibly claim a fourth as British. The larvæ of these interesting flies feed mostly on the seeds of our composite plants. I have already reared several. I have one to add to the Trypetidæ this year. It is *Trypeta stellata*, Fuessli. Curtis noticed the fly in the heads of the corn chamomile (*Anthemis cotula*) and raised it in August. Our continental friends have reared the same fly from the groundsel, ragwort, chamomile, and even the goat's-beard (*Tragopogon pratensis*). I raised a beautiful example of this fly on the 17th of July, from the flower-head of *Coreopsis grandiflora*, a garden flower that came from Cambridge. The star at the tip of the wing is very conspicuous. It would seem, from Kaltenbach, to be exclusively attached to composite vegetation.

I found, in September, the leaves of a tall-growing buttercup (*Ranunculus lingua*) that is not uncommon in the fenny parts of Yorkshire, mined, apparently, by one of the Anthomyidæ. The mine commences at the top of the long leaf, and runs nearly parallel to the mid-vein the whole length of the leaf. I am well acquainted with the mines of *Phytomyza flava*, whose white and twisted minings are so common on the leaves of the creeping crow-foot (*R. repens*), and have often bred the miner. The economy of this miner, however, differs from that of the one that affects *Ranunculus lingua*, even allowing for all differences in the shape of the respective leaves. Many of the leaves, I may remark, were mined from end to end in a straight line. The larvæ had all escaped from the mines, so that we must infer that they pupate in the soil below. My latest, and possibly my best discovery in insect life, in 1885, is *Cecidomyia caricis*, if I can but succeed in rearing the imago. I found it, as a larva, feeding on the rudimentary utricle of *Carex muricata*; it has since spun a slight web within the overwrapping scales, that will serve it as a home for the winter. The *Carex* that is affected by the cecid is fond of moist meadows. I should infer, therefore, that the pupa will need to be kept fairly moist, till it gives forth its tenant, much after the method I have adopted so successfully in the case of *C. cardaminis*. It has not been reared that I am aware of. Bergenstamm says in his 'Synopsis,' published at Vienna in 1876: "Imago unknown"; and in a supplementary note, H. Loew simply adds: "the larvæ deform the fruits of *Carex muricata*."

Fulwith Grange, near Harrogate, December, 1885.

DESCRIPTIONS OF NEW SPECIES AND A NEW GENUS
OF RHOPALOCERA FROM THE MALAY PENINSULA.

By W. L. DISTANT, F.E.S.

Fam. NYMPHALIDÆ.

Subfam. NYMPHALINÆ.

EUTHALIA GOODRICHI, n. sp.

Female.—Wings above pale olivaceous brown; anterior wings with a small rufous spot margined with black in cell, and a similarly coloured oblong discocellular spot at end of cell, beyond cell a transverse series of light greyish white spots cross the wing, the spots placed singly between the nervules, excepting two between the third median nervule and submedian nervule, the lowermost on inner margin minute; beyond these spots is a violaceous fascia, containing a subapical greyish white spot, and outwardly marked with a series of dark purplish spots placed between the nervules; posterior wings with a discal series of greyish white spots placed between the nervules, but not extending beneath the upper median nervule, a small rufous spot margined with black in cell, and a submarginal angularly waved linear dark purplish fascia. Wings beneath much paler than above; anterior wings with the spots in the cell larger and brighter, greyish white spots as above, followed by a series of dark purplish spots, much smaller than those above; posterior wings with a small spot in cell as above, and a discocellular spot at end of cell, the series of greyish white spots as above, but continued to abdominal margin a little above anal angle, the last spot being longest, the waved fascia above being replaced by a series of small dark spots as on anterior wings. Body and legs more or less concolorous with wings. Exp. wings, 75 mill.

Hab.—Perak (Lieut. Goodrich; coll. Dist.).

TANAËCIA CONSANGUINEA, n. sp.

Male.—Closely allied to *T. pulasara*, but differing in the following particulars:—The six contiguous transverse spots on apical half of anterior wings are more regular in size, and therefore their inner margins are subparallel, and not deeply and sinuously irregular, as in *T. pulasara*; these spots are also darker in hue; the posterior wings have the outer margin of the

contiguous spots on outer area bordered with greyish white, and the violaceous apical shading in *T. pulasara* is absent in *T. consanguinea*; anterior wings beneath with corresponding differences, as above. Exp. wings, male, 55 mill.

Hab.—Perak (Künstler; coll. Ribbe).

Fam. ERYCINIDÆ

Subfam. NEMEOBIINÆ.

SIMISKINA, gen. nov.

This genus may be thus briefly and comparatively characterised. It differs from *Abisara* in having the lower discocellular nervule of the posterior wings much longer than the upper, thus resembling *Stiboges*; but from that genus it is easily distinguished by the subcostal nervules of the posterior wings, which bifurcate before the upper end of cell. In shape of wings and general superficial features *Simiskina* resembles *Abisara*.

SIMISKINA FULGENS, n. sp.

Wings above bright ochraceous; anterior wings with the apex, outer and inner margins, broadly dark brownish, with a narrow linear discocellular spot of the same colour; posterior wings with the cellular area, the whole area between cell, upper median nervule and abdominal margin, and a broad outer margin, dark brownish. Wings beneath pale ochraceous; both wings with linear pale castaneous discocellular spots, a much waved castaneous fascia crossing the wings beyond cells, recurved, and terminating on abdominal margin of posterior wings; two fainter outer discal fasciæ, the outermost of which is blackened on posterior wings; outer margins pale castaneous on posterior wings, preceded by two dark linear fasciæ. Body above fuscous; beneath more or less concolorous with wings. Exp. wings, 36 mill.

Hab.—Penang (Lieut. Goodrich; coll. Dist.).

ENTOMOLOGICAL NOTES, CAPTURES, &c.

ANOSIA PLEXIPPUS IN KENT.—The following particulars of an unrecorded occurrence of *Anosia plexippus* (*Dandis archippus*) have been forwarded to me. The writer is Mr. F. W. Hawes, of 14 Dovecote Villas, Wood Green. I have seen the fragments, and

have no doubt as to the genuine character of the communication thus adding another county—Kent—in which the species has been observed:—"My cousin, F. J. Hawes, was at school at Snodland, near Maidstone, in the month of September, 1881, and it was on the afternoon of Wednesday, 21st, while out with his schoolfellows, that he saw the specimen of *Anosia plexippus* I now have, flying heavily over a meadow near the school. After two or three attempts he succeeded in getting the insect under his hat, and also in transferring it to a box, and so to a drawer in his bedroom. Here it lay for more than three weeks; after which he doubled it over in a letter and forwarded it to me,—minus head, antennæ, and left fore wing,—asking at the same time to be told the name. Of course it is owing to my cousin's rough treatment that the butterfly is in such poor condition. It is, nevertheless, a rather large male example when compared with some which were exhibited on Thursday last at the South London Entomological Society's meeting. I need hardly add that as my cousin is not an entomologist there need be no doubt entertained of the truth of this story. I think it is an encouraging sign for the naturalisation of *A. plexippus* that it has now been taken and observed in Cornwall, Devon, Dorset, Isle of Wight, Sussex, and Kent,—comprising the whole of the counties on our south coast."—J. JENNER WEIR; Beckenham, Kent, December 8, 1885.

LYCENA ARGIOLUS IN THE MIDLANDS.—It seems strange that in this part of the country there should appear to be only one brood of this butterfly in the year. The earliest date on which I have known it to occur has been the 5th of April, though it usually does not appear until about the 20th of the same month. It is no longer to be seen after the first or second week in June.—W. HARCOURT BATH; Birmingham, November, 1885.

COLIAS EDUSA IN NORTH WARWICKSHIRE.—On September 20th last I captured a female specimen of this insect. *Colias edusa* is very scarce in these parts. This is the only capture I have known since the "*edusa* year" of 1877.—ID.

DIMINUTIVE DIURNI.—I have long since proved to satisfaction that butterflies and moths may be dwarfed by simply starving the caterpillars; and the progeny of Southern European parents I could show have proved dwarfs when reared in this country. *Colias edusa*, however, appears to vary remarkably in size in

Europe in a state of nature. I have females taken at Luchon, in the Pyrenees, in 1872, that exceed two inches in wing expanse; and one captured on the blue pimpernels, at the side of the Palladolid Canal, in 1884, that only measures (one inch and seven lines), broadly speaking, an inch and a half. I may remark that the former were captured in the elevated misty valley of the Poet's Narcissus, or Val-de-Lys, in the month of May; and the latter was captured on the dry limestone and sand of Castile on the 5th of July, in the summer heat. So, likewise, I have males, taken at Luchon, that measure two inches and a half; and one from the Plains of Lombardy, taken in 1878, that only measures one inch and eleven lines; I believe it to be one of the summer brood. Many of our butterflies, as I could show, become larger, and are so in more congenial conditions on the plains of Southern Europe. The lucern probably grows too dry, or the heats are too languid there for the full development of *Colias edusa*.—A. H. SWINTON; Binfield House, Guildford, December, 1885.

SPHINX PINASTRI AND OTHER SPHINGIDÆ AT ALDEBURGH.—During a recent visit to Aldeburgh, Suffolk, I had the pleasure of making the acquaintance of a British larva of *Sphinx pinastri*, which was in the possession of Dr. Hele, who has been successful in the capture and breeding of this rare insect. On enquiring into its history I was informed by Dr. Hele that in June last he had taken at rest upon a pine tree a crippled female, which laid two fertile eggs, from which he obtained two larvæ. One of these larvæ unfortunately died, the remains of which I saw, but the survivor was a very healthy example; and I since learn was successfully photographed the day before it went to earth. I also had the opportunity of examining a goodly number of the specimens which he had taken in previous years, or reared from the eggs which he had procured from captured females, together with the pupa-cases, which are very similar to those of *Sphinx ligustri*, but of smaller size. In addition to the specimens exhibited by Dr. Hele, I saw a specimen that was captured at rest near the church by a son of the vicar. I may own that at one time I was sceptical as to the genuineness of the title of this species as a British insect, and that before my visit to Aldeburgh I regarded the alleged capture as a possible imposture; but incredulity has given place to conviction, and I consider that the position of *S. pinastri* in our fauna is materially strengthened.

It has, I am informed, been suspected that it may have been accidentally imported or otherwise. I am positively assured by Dr. Hele that there is no ground for believing that there has been any attempt to acclimatise or artificially introduce the insect; and as far as I am able to ascertain there is no evidence of any such attempt. I am not at liberty to disclose the precise locality of capture. Isolated specimens have, it is true, been captured at Ipswich and elsewhere; but I may say that the spot where the largest number have been taken is not favourable to the view of an artificial introduction, it being inaccessible to dealers, who might have a motive to deceive, and to the public generally. It is possible that *S. pinastri* has for centuries inhabited some of our pine woods, where it occurs now from year to year; but this must be an open question; and it is, perhaps, more probable that it has, like some of our other rare Sphinges, made our country from time to time the land of its adoption. I submit that although its appearance is, perhaps, more local, it has with them an equal claim to be recognised as a British species. I may add that two specimens of *Chærocampa celerio* were captured at Aldeburgh in October last,—one a perfect beauty; the other was knocked down from a window by a servant girl, and was sadly damaged by her duster. *Acherontia atropos* was very plentiful at Aldeburgh.—SIDNEY COOPER; Friar's Watch, Walthamstow, December 3, 1885.

[If Mr. Cooper will refer to the 'Entomologist' Synonymic List of British Lepidoptera, he will find that *Sphinx pinastri* is now recognised as a British insect.—ED.]

ACHERONTIA ATROPOS AND SPHINX CONVULVULI ABUNDANT IN ESSEX.—At Walthamstow I obtained about fifty larvæ of *A. atropos*, most of which I found myself in the potato fields. I also captured in my garden at Walthamstow six specimens of *Sphinx convulvuli*, but not in such fine condition as those which I took there ten years ago, as unfortunately I was a little too late.—SIDNEY COOPER.

ACHERONTIA ATROPOS, &c., AT CHRISTCHURCH.—On the morning of November 10th, 1885, a male specimen of *A. atropos* was brought to me alive by a little girl, and by the appearance of the insect it must have only just emerged from the pupa; but, as far as I could ascertain, it was found at rest on a potato-bed. The

weather being so cold through the month I have seen scarcely anything at ivy-bloom or sugar. My captures of any importance consist only in the genus *Xylina*; at light, *Hybernia defoliaria*, *H. aurantiaria*, and *Himera pennaria* (numerous). I have also to record from Ealing, on the night of the 2nd inst., a specimen of *Dasypolia templi*, at rest on a street lamp, in perfect condition. — J. M. ADYE; Somerford Grange, Christchurch, November 18, 1885.

DASYCAMPA RUBIGINEA AT CHRISTCHURCH.—After many days' perseverance I have, at last, obtained specimens of *D. rubiginea*; the first on November 24th at sugar, and a second on the 30th at ivy bloom; both in fine condition.—J. M. ADYE; St. Erith, Castle Hill Road, Ealing, S.W.

ASTHENA BLOMERI.—As this insect is just now under discussion, the following notes may be of interest:—I have taken the species in a wood near here annually since 1880, though it is very uncertain in appearance, being abundant some seasons, and in others scarce. The earliest date on which I have taken it is May 11th in 1882; and the latest, July 8th in 1884. The latter was in good condition, evidently not long out of pupa. The average date of its first appearance in this district seems to be about the 24th of May, and it is most abundant about the middle of June.—THOMAS GIBBS, jun.; Bretby, Burton-on-Trent.

BRYOTROPHA POLITELLA IN YORKSHIRE.—I recently sent to Mr. C. G. Barrett, for determination, half a dozen specimens of a *Gelechia* I found commonly during the past summer in the wood and on the adjoining moorland hill-side, overhanging Greenfield railway station. Mr. Barrett informed me they were the local *B. politella* (*Gelechia expolitella*).—G. T. PORRITT; Huddersfield.

CUCULLIA ARTEMISIE: ENQUIRY.—May I enquire, through the medium of the 'Entomologist,' whether the fortunate captor of *Cucullia artemisie* and *Callimorpha hera* (Entom. xviii. 290, 297) is identical with a Mr. Brooks, of Norwood, who, earlier in the year, was offering for sale or exchange *Vanessa callirrhoe* as a fine variety of *V. atalanta*, also *V. urticae* (var. *ichnusa*), only asking £2 for the first of these specimens?—SYDNEY WEBB; Maidstone House, Dover, December, 1885.

SOUND EMITTED BY THE LARVA OF ACHERONTIA ATROPOS.—In reply to Mr. J. R. S. Clifford (Entom. xviii. 301), who

enquires if the larvæ of *Acherontia atropos* can produce sound, I enclose the report of Mr. E. B. Poulton, of Oxford (who is colouring the larvæ of the Sphingidæ from living specimens), to whom I sent, through Mr. H. B. Spencer, a fine larva in the autumn of this year. Thinking the information will be interesting, I forward it for your insertion:—"The fact that a sound is emitted by this larva has been often stated, and the sound has been compared to the snap that accompanies an electric spark. During the past autumn (1885) the larva was very common, and I received several specimens; of these only one made the sound, as far as my observations went. There is no doubt the sound is of a defensive character, and is uttered when the animal is irritated, as has been positively stated; thus when the larva was handled it generally made the snapping sound, and more especially when it was tapped on the head. From the observation of one specimen I believe that the sound proceeds from the mandibles. These are very large, and have a considerable range of movement, so that they can bite over each other. On the outer surface of each is a transverse tuberculated ridge, and when one mandible is outside the other, and is gliding over the outer surface of the latter towards its base, it is momentarily arrested by the ridge, but passes over it with a jerk, that causes sharp collision with the outer surface on the basal side of the ridge. The relative position of the mandibles during the momentary arrest is here roughly shown. This sudden jerk and resisting clash of the hard chitinous surfaces is, I believe, the cause of the sound. One is tempted to suggest an explanation of the origin of this sound so unusual among larvæ. When irritated or attacked, large larvæ have the habit of biting vigorously in all directions, but without aim, and generally with a perfectly fruitless result. Their protection is not of the actively defensive kind, because of their peculiar anatomical construction, which renders them liable to death from the smallest injuries (see Trans. Ent. Soc. Lond., 1885, pp. 321 *et seq.*, for a further development of this view of the writer). Nevertheless when detected, and as a last chance, they make this aimless and nearly always useless resistance; the resistance is useless because aimless, for the mandibles are moved with great



force, and would inflict serious injury if they were ever successful in catching hold of an enemy. But the defence of the larva is practically concentrated in other directions, and this means of protection remains unimproved at a point at which it is almost useless. It is, nevertheless, likely that any sound, which was incidentally caused during the process, might be highly protective, because it would certainly terrify the enemies of the larva. Hence where it is likely to have been improved up to the effective point it has been reached."—JAMES A. TAWELL; Earls Colne, November 23, 1885.

SPHINX CONVULVULI, SOUND PRODUCED DURING FLIGHT.—Your correspondent is certainly mistaken in supposing (Entom. xviii. 296) that *Sphinx convulvuli* produces no sound whilst hovering in search of food. The sound created by the rapid vibration of the wings is very perceptible, but to detect it, whilst the insect is poised, the entomologist must lay aside his eagerness to catch, being content to watch, and bend his head in perfect quietness over the flower-bed. The loss of a specimen or two might cause regret to some, but the true lover of Nature delights in taking cognizance of everything. With me *Macroglossa stellatarum* is a great favourite, but *Sphinx convulvuli* excels, although in many things resembling the former. With its prodigious size is combined ease of movement; the graceful manner in which it coils and uncoils the long proboscis; the lightness with which it floats from flower to flower, ever and anon poising itself to extract the nectar, and then darting off in a rapid but somewhat irregular flight, sometimes to a considerable height, perhaps to return to the same flower-bed,—is simply delightful to a keen observer. I may mention that this *Sphinx* commences its flight before daylight has departed, and appears to be fearless of moonlight, thus making observation simple. Those who desire this species should cultivate the white petunia, and if this lepidopteron is to be found in the neighbourhood few will be the seasons during which specimens may not be taken.—L. F. ALLEN; East Park House, Southampton, November 21, 1885.

PERFORATED OVA OF LEPIDOPTERA.—It is not quite clear to me whether Mr. C. B. Holman Hunt (Entom. xviii. 324) is astonished at the discovery of perforated ova in a given genus, or whether he wishes for information as to "perforated ova" in Lepidoptera generally. In the latter case he will do well to

consult Leuckart's essay (in the *Archiv. f. Anatomie u. Physiologie*, 1885), 'Ueber die Micropyle und den feineren Bau der Schalenhaut bei den Insekteneiern,' one of the plates illustrating which is devoted to the eggs of Lepidoptera.—F. JEFFREY BELL; 5, Radnor Place, Gloucester Square, W.

ANDRICUS (APHILOTHRIX) GLANDULÆ, *Schenck*.—On the 4th November, in walking through Cann Wood, near Plymouth, in search of oak-galls, I found this turban-like gall on the terminal branches of coppice-grown young oaks. This gall is described and nicely figured in the 'Entomologist' (vol. ix. p. 1); following the description it is stated that Mr. Rothera found this gall at Ollerton, near Nottingham; but no mention is made whether he bred the insect or not. Can Mr. Fitch say when the gall-maker appears, and if any *Synergus* or parasite has been bred from the gall?—G. C. BIGNELL; Stonehouse, Plymouth, Nov. 17, 1885.

TEGEOCRANUS CEPHEIFORMIS.—Mr. A. D. Michael exhibited and described, at a late meeting of the Linnean Society, the remarkable nymphal stage of the above species, belonging to the family Oribatidæ, which he has lately discovered for the first time in England. The whole life-history of this animal he has now succeeded in tracing, having in the first instance been led to the correct result by dissecting the already fully-formed imago out of the inert nymph. The creature in its nymphal stage is an exceedingly strange and beautiful one; carrying on its back, as concentric shields, the dorsal portions of all its cast-skins, and these bordered by a series of singular projections, each bearing a rose-leaf-like cuticular process of transparent membrane with chitinous nervures. The drawing of the nymph was first sent to Mr. Michael, two years ago, by Herr Pappe, of Bremen.

NORTH KENT ENTOMOLOGICAL SOCIETY'S EXHIBITION.—The first Annual Exhibition of Insects, shown in Pocket-boxes, of this Society, was held at the Coffee Palace, Woolwich, on Thursday, November 19th, and, although the majority of the members have had but little spare time during the past season, it may be considered fairly satisfactory. The exhibitors were the President of the Society, Mr. W. G. Dawson, whose contribution included *Thecla rubi*, *T. w-album*, *Sphinx convolvuli*, *Nemoria viridata*, and many other species too numerous to mention. Mr. Smith, Vice-President, exhibited, among others, *Argynnis paphia*,

Limenitis sibylla, *Colias edusa*, *Trochilium crabroniformis* (*bembeciformis*), very fine *Lasiocampa quercifolia*, and *Saturnia pavonia*. Mr. Webb exhibited a pale variety of *Abraxas grossulariata*, *A. sylvata* (*ulmata*), *Notodonta chaonia*, and others. Mr. J. Knight exhibited bred and captured Lepidoptera; among the former were *Meliana flammea* and *Drepana harpagula* (*sicula*); and the latter included *Sphinx convolvuli* and *Toxocampa pastinum*. Mr. Poore's included a beautiful variety of *Sphinx convolvuli*, and many other good species. Mr. E. Knight's were a good variety of *Chelonia villica*, *Eucosmia undulata*, *Phytometra viridaria* (*ænea*), &c. Mr. Sargent, a variety of *Leucoma salicis*, with a black border on all the wings. Mr. Holmes, a good blotched variety of *Vanessa atalanta*. Mr. Gower had, among others, *Melitæa aurinia* and *Calligenia miniata*. Some very good hybrids of *Smerinthus ocellatus* and *S. populi* were also exhibited by a gentleman who was present as a visitor. The Society has now completed the first year of existence, and appears to be firmly established.—H. J. WEBB, Sec.; 5, Downes Place, Plumstead, Nov. 21, 1885.

EUROPEAN RHOPALOCERA.—We have received a specimen copy of a list of 'European Rhopalocera, with their varieties and principal synonyms,' by W. F. de Vismes Kane, M.A., M.R.I.A. (London, Macmillan & Co., 1885); printed on one side only for labelling purposes.

AMERICAN BEETLES.—Henshaw's list of the Coleoptera of America, north of Mexico, just issued, includes 9238 species. Crotch's check-list, published in 1874, contained 7450 species. Previous to these came the lists published by Le Conte; and in 1880 Austin published a supplement to Crotch, bringing the number of nominal species up to 9704, which recent studies have greatly reduced. —'Science,' vi. 382, October 30, 1885.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY EXHIBITION.

ON the 3rd inst. the Annual Exhibition of the above Society was held in the rooms at No. 1, Denman Street, London Bridge. There was a very large attendance both of members and their friends. The exhibits represented nearly all branches

of biological science, but the class Insecta was more especially favoured. These last were so numerous that it would be utterly impossible to mention them all in detail, but among those we particularly noticed were Mr. McLachlan's cases of European caddis-flies (Trichoptera), the Ascalaphidæ, ant-lions (Myrmeleonidæ) and Nemopteridæ, and some larval cases from Zanzibar resembling shells of the molluscan genus *Cyclostoma*, formed by one of the Psychidæ.

Mr. J. Jenner Weir, four cases of Exotic Lepidoptera, including species of the genus Satyridæ, comprising the continental and insular topomorphic species. Danaian butterflies of the genera *Tirimula* and *Anosia*, and specimens of *A. plexippus* (*Danaïs archippus*), from widely different parts of the world; also exhibits of the genera *Morpho* and *Caligo*.

The President, Mr. R. South, twelve cases illustrating comparative series of *Melitæa athalia* from various English localities, together with specimens of *M. athalia*, *M. dictynna*, *M. parthenie* and *M. aurelia* from Switzerland; series of *Melitæa aurinia* (*artemis*) from various English, Irish and Scotch localities; series of *Melitæa cynthia*, *M. aurinia* (*artemis*) and var. *merope*, *M. cinxia*, *M. phœbe*, *M. didyma* and var. *alpina*, *M. dictynna*, *M. aurelia*, *M. parthenie* and var. *varia* from Switzerland; series of *Lycæna ægon*, *L. astrarche* (*agestis*) var. *salmacis* and var. *artaxerxes*, *L. bellargus* (*adonis*), all British; *Lycæna icarus* (*alexis*) from various English, Irish and Scotch localities, including several specimens of the var. *icarinus* and forms intermediate between this var. and the type; *Lycæna corydon* from Isle of Wight this year; several of the females are much suffused with blue and the under sides show interesting variations; twenty species of *Lycæna* from Switzerland; *Cænonympha typhon* (*davus*) from various Scotch and North English localities; some very handsome forms among an exceedingly long and variable series of *Boarmia repandata*, bred this year from larvæ collected in North Devon; *Hypsipetes sordidata* (= *elutata*) from various British localities, and a series of *Larentia cæsiata* from Scotland and the north of England, together with three preserved larvæ of the species from Shetland; a bred series of *Sesia chrysidiformis*; an interesting and variable series of *Zygæna filipendulæ*; a series, including banded forms, of *Gnophos obscurata* (these three species from Folkestone in 1885);

thirty species of rare British Tortrices taken or bred the same year; and a large number of rare and interesting Lepidoptera, including seven forms of the genus *Argynnis* from Switzerland, and examples of Swiss Satyridæ.

Mr. Adkin, four cabinet drawers containing, with others, the genera *Argynnis*, *Melitæa* and *Vanessa* (among the latter were some fine smoky varieties of *V. urticæ*), Lycænidæ including *Polyommatus dispar*, *Hepialus humuli* var. *hethlandica*, *H. velleda*, varieties of *Zygæna filipendulæ*, and a long and varied series of *Nola centonalis*, *Eugonia quercinaria* (*angularia*) var. *infusca*, fine bred series of *Endromis versicolor*, and many others.

Mr. Elisha, four drawers from his beautiful collection of Tortrices; a fine series of *Geometra smaragdaria*, bred from Essex larvæ, and *Coleophora vibicigerella*, bred from larvæ, also taken in the Essex salt-marshes during the present year. The larva of the last-named species, being but just recently discovered, attracted the particular attention of micro-lepidopterists.

Mr. Farn exhibited an hermaphrodite specimen of *Pæcilocampa populi*, a series of *Theristis mucronella* (*Pteroxia caudella*), and fine varieties of *Penthina pruniana* and *Spilonota lariciana*; also a very striking form of a species of *Scoparia*, which was not identified. Mr. Wellman showed, among many others, *Sesia chrysidiformis*, *S. ichneumoniformis*, and *S. culiciformis*, *Chærocampa celerio* captured at Walton-on-the-Naze; varieties of *Cidaria suffumata*, a fine series of *Bryophila muralis* (*glandifera*), imagines of a third brood of *Acidalia rubiginata* (*rubricata*), and second broods of *A. trigeminata* and *holosericata*; *A. ochrata* and *Psamotis pulveralis*, taken at Folkestone by himself; also a number of species of Tortrices and Tineæ.

Mr. Tugwell, three drawers containing very long and varied series of Zygænidæ, including his unique *Syntomis phegea*, two "IVI" varieties (*signata*) of *Setina irrorella*, the whole of the *Dianthæciæ*, with northern and southern forms, and other rarities.

Mr. Tutt, two drawers, showing the most remarkable inter-variation of *Agrotis tritici*, *A. nigricans*, *A. obelisca*, and *A. cursoria*.

Mr. G. W. Bird, species of Lepidoptera from the Cambridge and Norfolk fens including *Macrogaster castaneæ* (*arundinis*), *Acronycta strigosa*, *Leucania obsoleta*, *Senta maritima* (*ulvæ*) and varieties; a remarkably fine series of *Schænobius mucronellus*,

Nascia ciliaris, *Platyptilia isodactylus*, *Coccyx ochsenheimeriana*, *Argyrolepis schreberiana*, and *Plusia chryson* (*orichalcea*).

Mr. J. Trimmer Williams, bred series of *Boletobia fuliginaria*, from South London; a variety of *Cabera pusaria*, having a sub-marginal band in addition to the usual three linear markings, and others.

Mr. B. A. Bower, fine series each of *Eupœcilia curvistrigana*, *E. subroseana*, varied forms of *Peronea tristana*, *P. hastiana*, *Euzophora cinerosella* and *Coleophora conyzæ*.

Mr. Levett, variety of *Vanessa urticæ*, a rather uncommon banded female variety of *Angerona prunaria*, without the apical band of the forewing, and several others.

Mr. H. T. Dobson, *Eugonia erosaria*, a dark form of *Drepana lacertinaria*.

Mr. Watkins, four cases of Exotic Lepidoptera, two of them showing exotic silk-producing moths.

Mr. Jager and Mr. Brooks, specimens of *Callimorpha hera* captured in Devonshire, the former's example of *C. hera* being the var. *lutescens*; the latter gentleman also exhibited two specimens of *Cucullia artemisiæ*, taken by him in Devonshire in August last.

Mr. Neave, varieties of *L. icarus* (*alexis*); one of them, taken at Brighton, was a very striking and beautiful form, and attracted a great amount of attention, the usual spots on the underside being replaced by a series of most regularly-arranged dashes; varieties of *Eugonia quercinaria* (*angularia*), bred; *Abraxas grossulariata* and *Melanippe montanata*.

Mr. Hickling, four specimens of *Sphinx convolvuli*, taken at Sidcup last season.

Mr. Hall, a curious variety of *Abraxas grossulariata*, *Dianthæcia albinacula*, *Toxocampa craccæ*, &c.

Mr. Cooper, fine bred series of *Pericallia syringaria*, *Zonosoma porata*, *Z. annulata* (*orbicularia*).

Messrs. Gaskell, Croker, W. Pearce, Eley, Lowry, Barker and others exhibited cases of British Lepidoptera.

Mr. Billups, drawers of British and Exotic Coleoptera, representing the Geodephaga, Hydradephaga, Staphylinidæ, Lucanidæ, and Scarabæidæ; British Hemiptera, Diptera, and Fossorial Hymenoptera; Ichneumonidæ, and a drawer of gall-makers, their parasites and inquilines. Amongst the

Coleoptera we noticed a fine series of the once rare *Spercheus emarginatus* from West Ham, *Dytiscus lapponicus* from Scotland, *Hydroporus planus*, *Quedius fulvicollis*, and many other rarities. Among the Hemiptera were *Ceraleptus lividus*, *Monanthia costata*, *Salda cocksi*, &c. Among the Heterogyna and Fossorial Hymenoptera were noted the rare *Stenamma nitidulus* and *S. westwoodi*, *Crabro signatus*, *Odynerus reniformis* and its parasite *Elampus panzeri*, *Prosopis dilatata* and others. Among the Ichneumonidæ, *Colpomeria lævigata*, *Chrysis neglecta*, and *C. fulgida*, *Banchus moniliatus*, *Ichneumon gracilentus*, *Thaumatotypus billupsii*, a genus and species new to science, and some eight or nine species of *Pezomachus* new to Britain. A case of wasps' nests from Borneo, and a series of a species of *Lepisma* new to science, taken at Aldgate. Mr. Billups' new style of mounting the Hymenoptera on a slender card, thus enabling the underside to be observed, was very much admired.

Mr. West, of Greenwich, six drawers of Coleoptera, showing the Geodephaga, Dytiscidæ and Phytophaga, the specialities being *Calosoma sycophanta*, *Chlænium schrankii* and *Stenolophus skrimshiranus*.

Mr. Lewcock, a case of the genus *Sylpha*, *Prionus coriarius*, *Saperda carcharias*, and several species of *Necrophorus*.

Mr. Cripps, a number of species of the genus *Donacia*.

Mr. Eley, *Notiophilus rufipes* and a specimen of *Brachycerus apterus*, from the Cape of Good Hope.

Mr. Enock, three cases illustrating the life-history of the British trap-door spider, and a very fine series of photo-micrographs.

Other sections of Natural History comprised exhibits by Messrs. Cook, Dawes, Mackenzie, Step, Rowe, Williams, Billups, W. A. Pearce, A. E. Pearce; and one room was set apart for the demonstration of microscopic exhibits, which were represented by twenty-one instruments lent by members of the Society, including valuable assistance from members of the South London and Quekett Microscopical Societies, and Mr. F. Enock.

It was generally remarked by all present that this was the most successful Annual Exhibition yet held by the South London Entomological and Natural History Society. — W. A. PEARCE and H. W. BARKER, Secretaries, 1, Denman Street, London Bridge, S.E.

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[No. 273.

ANOSIA PLEXIPPUS.



IN view of recent occurrences in this country, our readers will probably be interested to have a figure and description of *Anosia plexippus*. The life-size figure given above is from a woodcut, drawn by Mr. Frohawk for the 'Field,' and has been kindly presented to the 'Entomologist' by the editor of that journal.

The following description is taken from 'Synopsis of the described Lepidoptera of North America,' by the late John G. Morris, Smithsonian Institute, Washington, 1862, which is a translation from one by Boisduval:—

The four wings somewhat sinuate, fulvous above, with a rather brilliant reflection; all the wings entirely margined with deep black, having, in fresh specimens, a bluish reflection;

nervures same colour. The summit of the primaries has three oblong, fulvous spots, preceded by eight or ten smaller, white or yellowish white, extending to the middle of the upper edge. Two rows of white spots on the outer borders of all the wings; occasionally the inner row is ferruginous. The fourth nervure of the secondaries has a large black spot or tubercle. The under side presents the same markings as the upper; but the points of the posterior edge are larger, and all white. The ground colour of the secondaries is nankin-yellow, with the nervures slightly bordered with whitish. The emarginations of all the wings white. Body black, with yellowish points on the thorax and breast.

The female has wider nervures, and is destitute of the black tuberculous spot on the secondaries.

Expands four and a half inches.

For records of the occurrence of *Anosia plexippus* in England, see 'Entomologist,' vol. ix. p. 267; vol. xviii. p. 305; vol. xix. p. 12.

It may be well to remind those who have been, or may be, lucky enough to take this addition to the British fauna, that its position in their collections is between the Apaturidæ and Satyridæ, or immediately before *Melanargia galatea*.

ON A PROBABLE NEW SPECIES IN THE CRAMBIDÆ.

By J. W. TUTT.

IN August, 1883, when collecting in the neighbourhood of Deal, I took one specimen of a *Crambus* which I was unable to determine. It is not in fine condition, but sufficiently so to make out that it has almost the exact markings of *C. geniculeus*, but the fringe is not glossy; it is much larger, and of a dull brown colour. During the following winter I took it, with other specimens, to compare with the insects in the Doubleday collection. As I had taken a great number of *C. geniculeus* and *C. inquinatellus* I was quite certain it was neither of these species; and, on comparing it with the Doubleday insects, I was unable to satisfactorily determine its species.

In size, fringe, and general appearance it comes nearer to *C. contaminellus* than any other British species, but it is a much

narrower winged insect. The markings are decidedly different, and the ground colour is of a very different shade. While working on the same ground quite a fortnight earlier, in 1884, I looked out for the species; and, by dint of hard work and the expenditure of a great amount of time, I succeeded in taking about three dozen, nearly one-half of which were so worn as to be useless for accurate comparison. The others were in beautiful condition, about fourteen males exhibiting a variation in colour from black (two specimens) and rich brown to pale grey; the females being all of a very pale grey, with the anterior wings much elongated, almost pointed. These I compared later with the Doubleday insects, and came to the same conclusion as before, *viz.*, that they could not be *Crambus contaminellus*, which certainly, as far as the Doubleday insects are concerned, seemed very constant in colour and markings.

Some three weeks later (about November or December, 1884) I met Mr. Coverdale at the Bethnal Green Museum, and, strangely enough, among other specimens he had brought for comparison were two males of the identical *Crambus*? These specimens he had taken at Shoeburyness the previous July; and, still stranger, one was the undoubtedly rare black form, the other being a grey form. He compared them with the Doubleday insects, noticed several points of difference, and expressed his intention of working up the species next season (1885). I told him I had a series of the same insect from Deal, and invited him to come to my house to see them, which he did some five or six weeks later. We then agreed to try our best to get a long series of the insect; he, at Shoeburyness; I, at Deal. Unfortunately circumstances did not permit him to do so (most entomological friends will, I suppose, know by this time that we have lost one of our hardest workers, as he has gone to the United States for an indefinite period), and I was left to my own devices at Deal, obtaining about four or five dozen specimens in a month, only one very dark one occurring amongst them. I have now a fine series of the species (which I shall be glad to show to anyone interested in the matter) of every conceivable shade of colour, between black and pale grey, and varying exceedingly in the intensity of the markings. Mr. Coverdale's collection, which is now in my hands, contains two specimens of undoubted *Crambus contaminellus*, labelled with Mr. Threlfall's name, and coming, I presume, from Lancashire;

and as these agree in every particular, apparently, with the Doubleday series, I have made the following notes on the chief points of difference between the (as I believe) two species:—

1. *C. contaminellus* is the larger insect of the two, and has much broader anterior wings.

2. The tips of the anterior wings in *C. contaminellus* are much less pointed than in those of the specimens from Deal and Shoeburyness.

3. The Deal insects vary much in the intensity of colouring, while *C. contaminellus* is constant.

4. The dark, longitudinal, linear marking or shade occurring in *C. contaminellus*, from the centre of the anterior wings to the thorax, is entirely absent in the other specimens.

5. The two transverse lines crossing the anterior wings of the specimens from Deal are almost precisely the same in shape as in *C. geniculeus*, the outer one nearer the hind margin being rather more elbowed near the costa, and the V mark just above the anal angle being very conspicuous. These lines are differently placed in *C. contaminellus*, and the V mark replaced by a small blotch.

Mr. Threlfall has written me that he takes *Crambus contaminellus*, and that it is remarkably constant in colouring. This would bear out my remark above, and confirms the opinion I had formed from the insects I had seen previously.

One or two points in the habits of the imagines are rather remarkable, and very different from the habits of the other species of the genus *Crambus*. When the specimens of the genus *Crambus* are at rest, I think, in every case that I have noticed, the body is closely appressed to the substance on which it is resting, the wings being folded well over the abdomen. The Deal insects rest with the extreme end of the palpi against the object, the palpi, thorax, and abdomen being in an almost straight line, and inclined to the object on which it is resting at about an angle of 30° ; the wings are folded completely over each other at the end of the body, being drawn out beyond the abdomen almost to a point. The last pair of legs are used as a sort of prop, being passed well back under the abdomen, the abdomen resting in an inclined position on them. The antennæ (of the females, especially) are very brittle, as I found to my cost when setting them.

Mr. Coverdale told me also that in looking over Zeller's collection, belonging (I believe) to Lord Walsingham, that several specimens were mixed up in that collection with the series of *C. contaminellus*; so that it seems the insect has been considerably overlooked on the Continent as well as at home.

My friend, Mr. Tugwell, took a few specimens of the insect some few years back in the same locality as mine came from, and was then convinced that the specimens were not the ordinary form of *Crambus contaminellus*, owing to the peculiar form of the anterior wings of the females.

Should any entomologist have duplicates of *C. contaminellus* (as described in Stainton's 'Manual') to spare, I should be very pleased to make an exchange with him for comparison.

I think it would be very interesting if entomologists, who know well the habits of *Crambus contaminellus*, would point out any points of similarity or difference to those I have mentioned as belonging to the Deal insects.

Mr. Porritt, who has bred *C. contaminellus* this season, tells me that he noticed nothing peculiar about their position at rest; but that he was under the impression that they rested in precisely the same manner as the other members of the genus.

If we can make quite certain of the position of *Crambus contaminellus* at rest, it would of itself make a strong point, independently of the difference in markings.

Although so closely resembling *C. contaminellus* in external appearance, I believe it will be proved to belong to a totally different genus, the structure of the antennæ and palpi differing considerably from the genus *Crambus*.

Rayleigh Villa, Westcombe Park, Blackheath, S.E., Dec. 4, 1885.

LYCÆNA ARGOLUS IN THE MIDLANDS.

BY W. HARCOURT BATH.

My note in the January number of the 'Entomologist' respecting the appearance of *Lycæna argiolus* in the Midlands has caused a number of your readers to apply to me for further information relating to the habits of this butterfly. I have penned the following few remarks for publication concerning it,

thinking that they might be interesting to other readers of the magazine.

The best locality for *L. argiolus* in the Midlands, with which I am acquainted, is Sutton Park, situated in the north-west extremity of the county of Warwick. The whole of its contents are estimated at about 2500 acres, not more than a third of which is occupied by woods, the remainder being divided into moorland, meadow, bog and lake. Hollies are the principal trees in all the woods, and in some places they almost rival the oaks in their majestic height, while, on the other hand, there is scarcely any ivy whatever. Now, it is well known that the larva of *L. argiolus* feeds upon the flowers of both holly and ivy where they occur, but whereas ivy is almost entirely absent from Sutton Park, I think we may safely assume this as the reason that there is only one brood in the season of the butterfly there, which fact I stated in the 'Entomologist' (vol. xix., p. 13).

I used formerly to attribute the absence of a second brood to the exposed situation of the locality—Sutton Park being about 600 feet above the level of the sea, and forming part of the highest table-land in England. I have recently, however, had reasons for entirely changing my views on this question. Learning from several sources that only one brood of the butterfly occurs in the year in such a southern locality as the New Forest in Hampshire, and that ivy is also scarce there, I have arrived at the conclusion that it arises from the same cause as in Sutton Park. It will be interesting to know in what other localities *L. argiolus* is single-brooded where ivy is not to be found, and how under other circumstances it maintains itself. When I first commenced my explorations in Sutton Park a few years ago, discovering an absence of ivy I took the hint to search for the larvæ of a supposed second brood on the flowers of the bramble, which comes into full blossom just about the right time, but hitherto I have entirely failed to trace the slightest connection between the two, and know of no one who has done so; it has since, moreover, been proved to be useless, a second brood of the butterfly not having been known to occur here at all. I may mention that bramble is very plentiful in most of the woods, where it composes a thick undergrowth. I have occasionally observed *L. argiolus* settle on the flowers of the mountain ash and crab-apple, but could never discover any signs of larvæ

thereon afterwards. It is, however, very possible that it will eventually accustom itself to the former tree, which is fast multiplying in the woods.

L. argiolus seems once to have enjoyed a much wider range than it does at the present day. There are records of its having been taken in many localities in the Midland Counties of England (Harwich, Worcester and Stafford), where it has not been seen or heard of for many years. This is most probably owing to increased cultivation, most of the woods where holly formerly flourished having been destroyed. This shrub is plentiful in most country lanes in the Midlands, but affords very little food for *L. argiolus*, as, being periodically cropped short, it is seldom allowed to flower.

Ivy on trees is abundant and very luxuriant in many lanes. The butterfly may probably be still lingering in a few unrecorded and secluded spots in the Midlands where holly is abundant. The only other locality that I know of besides Sutton Park is Needwood Forest, near Burton-on-Trent, in East Staffordshire, where I believe the butterfly is tolerably plentiful. I believe there is only one wood there, as in Sutton Park, though I am not quite certain whether ivy is scarce or otherwise there, but I have heard that holly is extremely abundant. Perhaps some readers of the 'Entomologist' will supply us with the necessary information respecting this point. Needwood Forest was once a very large tract of woodland, but is being fast cut up and intersected, and now only a few detached woods remain. It is evident that *L. argiolus* will not remain there much longer.

It is more consoling to know that its extirpation is not likely to take place so rapidly in Sutton Park, which belongs to the Corporation of Sutton Coldfield, who are too fond of their pleasure-ground at present to allow it to be destroyed. It is, however, certainly doomed some day to be converted into coal mines, when, instead of the voice of the cuckoo will be heard the shrill scream of the steam engine and the clanking of the forge.

The woods of Sutton Park have all been artificially made. They were planted probably about five or six centuries ago, so that I may safely assert that the introduction of *L. argiolus* must have happened at a comparatively recent date, at a period when it was plentiful in adjoining districts.

I may add that in seasons when the butterfly is very abundant

it occurs all over the park, and sometimes even on the outskirts, though at other times it is confined to only two or three localities.

The further following remarks respecting its habits, selected from my note book, may also, perhaps, be interesting. I have already, in the 'Entomologist,' (vol. xix., p. 13) given the dates of appearance of the imago, but I may add that it is always regulated by the flowering of the holly, which it closely follows. I have never known it to precede it. The majority of males appear earlier in the spring, the females later on, the latter seldom before most of the males have disappeared. A few males emerge, however, at the same time as the females; likewise a few females are always to be found among the males at the earlier part of the season. Both sexes soon become worn; particularly is this the case in windy weather, when they are blown helplessly against the prickly holly round which they fly. Usually the males are more abundant than the opposite sex in an overwhelming proportion, but last season (1885) proved entirely the opposite, when the former were in the minority.

Most butterflies do not venture forth until the sun has well warmed the atmosphere and absorbed the dews, but the little *L. argiolus* is an exception to this rule. Frequently have I witnessed it flying round the tops of the hollies, even as early as 5.30 in the morning, as soon as the rising sun has cast its rays upon them. It also remains on the wing later in the day than most of its allies, 6.30 p.m. in the month of May being not at all an usual time for it to be seen about in its haunts. The period that it seems to enjoy mostly is just before noon. On dull days *L. argiolus* is very seldom to be seen, but can be taken by beating with a long stick the hollies, under the oily leaves of which it hides itself, and to which it bears a close resemblance in colour when at rest. A striking protective resemblance may also be noticed between the flowers of the holly and the butterfly when it alights upon them, the spots on the under surface of the wings matching the little bunch of blossom.

This insect does not appear to like windy weather, but that does not prevent it flying provided there be any sunshine. Very little wind penetrates into the woods, on account of the thick foliage of the evergreens, but it is noteworthy that the butterfly prefers exposed situations on the outskirts of woods, or in open

spaces. Its flight is rather weak, like most others of the genus, but it is rather difficult to capture, as it generally keeps to the tops of the hollies, where most of the flowers are to be found, only venturing below under exceptional circumstances.

Sutton Coldfield, near Birmingham, January 10, 1886.

[We believe that Mr. J. Jenner Weir was the first to point out that the absence of ivy in flower in any particular neighbourhood, might possibly cause variation of seasonal appearance in *Lycæna argiolus*, in some very terse and thoughtfully considered remarks made before the South London Entomological Society, and as Mr. Weir has been in correspondence with Mr. Bath, he has doubtless assisted the latter in coming to the foregoing conclusions. One remarkable fact mentioned by the writer of the above remarks is his statement that the flowers of bramble and mountain ash would form substitutes for ivy flowers as a pabulum for the larvæ of this species. It will be interesting to know if these plants flower in Sutton Park at a time when they are usually in fruit elsewhere, *viz.*, during the flowering period of *Hedera helix*.—J. T. C.]

AN AFTERNOON AMONG THE BUTTERFLIES OF THURSDAY ISLAND.

BY GERVASE F. MATHEW, R.N., F.L.S., F.Z.S., F.R.G.S.

THE following account of an afternoon's collecting among the butterflies of Thursday Island, on the 18th of April, 1885, may perhaps be of interest, as it is a spot, I suspect, which is not often visited by an entomologist.

Thursday Island is the central and smallest of a group of islands lying in Torres Straits, off the North Coast of Australia, and situated between latitude 10°30 and 10°58 south, and 146°6 and 142°20 east longitude. The other islands of the group are Hammond, Goode, Wednesday, Friday, Horn, and Prince of Wales Islands, with numerous small islets. Prince of Wales Island is the largest, being eleven miles long by ten miles broad. They are hilly, and the hills, from the sea, appear to be densely wooded, as are also the valleys between the hills. Most of the islands possess numerous small bays, some of them with an

ample sandy beach, while others are fringed with belts of mangrove bushes. In some of the islands, between the ranges of hills, there are wide plains but thinly wooded with *Eucalypti*, and, after the rainy season, covered with high grass. Springs of water are to be found on nearly all the islands throughout the year, and after the rains there is generally a profusion in the gullies and water-holes. Thursday Island, being so small, is but poorly provided, and the inhabitants store up rain-water in tanks to meet their necessities during the dry season, the water in the water-holes being unfit for human consumption.

Thursday Island is one mile and a half long by about three-quarters of a mile wide, and has a range of hills running half-way through it in a north-easterly direction, divided by a moderately broad valley crossing the island from north to south, and beyond this again there is a range of hills in the north-east corner of the island, and another range in the south-east corner. The highest point is 374 feet high. The settlement is situated upon Vivien Point, the south-west extremity of the island, and extends along the beach for about half a mile from thence. The whole island is surrounded by a coral fringe reef.

After lunch I went on shore with three of my messmates, Lieutenants Ommanney and Allenby, and Mr. Hunter, midshipman. The two former I provided with nets and boxes, as they were anxious to help me, as they said, to complete my collection of the Australian butterflies, as this would be the last opportunity we should have of landing in Australia. We landed on the beach a little to the north-east of the settlement, and walked to the valley which intersects the island, and across this to a range of hills which lie in the north-east corner, and whose highest point, Rose Hill, is 223 feet. The valley was sparsely clothed with trees, the chief of them being *Eucalypti*, *Casuarina*, *Banksia*, *Persoonia*, &c. Grass was abundant everywhere, and in some places, especially at the edge of the forest, was breast high. There were also a few small *Acacia* and *Cassia* bushes, and some others I am unacquainted with; and here and there patches of vetches and other leguminose plants. The ground in many places was thickly strewn with volcanic blocks of stone, and these, hidden among the grass, made walking dangerous and unpleasant, and running almost out of the question. Most conspicuous objects in this valley were the cone-shaped or

castellated dwellings of the *Termites*. Some of them were from ten to twelve feet high, and eight or ten feet in circumference. They were evidently all inhabited, for several pinnacles we knocked off were swarming with ants. The galleries were full of vegetable matter, which apparently consisted of a mixture of bits of grass, grass-seeds, and wood-dust. The nests were composed of agglutinated sand, and were as hard as sandstone itself. It is astonishing how these little creatures can construct such wonderful dwellings. They must be several years raising one to a height of ten feet; for besides these large dwellings there were a number of smaller ones in course of erection, some only a few inches above the surface of the ground, but they had all an old weather-beaten appearance. The galleries looked as if they had been lined with a dark reddish brown shining substance, though this might have been produced by the traffic of such multitudes of insects constantly running to and fro.

The first butterflies we saw were *Junonia orithya*, which were fond of settling on bare patches on the ground, but they were so wary that they were very difficult to catch. There was a strong breeze blowing, and directly they took wing they were carried off at a great pace. Some of the *Eucalyptus* trees were in flower, and proved attractive to several species of butterflies, notably *Papilio polydorus* and *Eurycus cressida*, butterflies which are very similar in habits and appearance when on the wing. One evidently mimics the other, and they fly in a slow floating manner, and are seemingly easy to catch. However, to-day, in this particular locality, they were flying high out of reach among the topmost branches of the trees; occasionally one descended and crossed the opening to another tree. This afforded a chance, and a rush was made after it; and it was amusing to watch how easily it avoided the frantic strokes of the net, and reached its goal in perfect safety, while its would-be captor stood still beneath the tree, hot, panting, and probably with bruised shins, and, in bad French, blessed *polydorus*, who was again feasting unconcernedly aloft. By the way, has anyone noticed how closely *Papilio anactus* mimics *Acrea andromacha* in its flight and general appearance? I have, upon several occasions, mistaken the two; the former flying in the weak straight manner of the latter, and the colours and pattern of both somewhat resembling each other. Among the grass were several species of *Terias*,

Satyridæ, Lycænidæ, and Hesperiidæ; and also a few Noctuæ, Geometræ, and Pyrales; but on the whole Micro-Lepidoptera were far from plentiful.

As soon as we reached the edge of the forest the aspect of affairs changed, and butterflies became decidedly more numerous. Here we separated, my companions keeping outside, while I scrambled up the side of the hill, until I got well within the shelter and shade of the trees. It was difficult walking, for the ground was covered with large loose stones, which were more or less hidden by the undergrowth, so that it was necessary to be careful and look where one was going to. Once or twice I narrowly escaped a fall as I was eagerly pursuing some attractive species, and usually, upon these occasions, the insect was lost; and I found it a much better plan to walk along quietly, or stop altogether when I reached a likely-looking spot, for butterflies often come quite close if one keeps perfectly still. The most abundant species in the forest were *Papilio polydorus*, *Hypolimnas alimena*, and *Euploea sylvester*; but perhaps I had better give a list of the species seen and captured, with remarks thereon, instead of a rambling disconnected account.*

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

LOCAL FAUNA.—Might I here suggest that it would be well if British entomologists were a little more systematic in their work? I have recently had my attention specially drawn to the insect fauna of Kent, and have been desirous of ascertaining what was on record for that county. On examining the records I find, not a list of the Kentish Lepidoptera, Coleoptera, or any other, including the known forms up to the date of publication, not even detailed local lists, but instead of this I have to deal with innumerable short notes spread throughout many periodicals and books, each one being a record of an occurrence of some "good" species, or an account of a successful day's collecting, but rarely with any reference to previous literature on the subject. Frequently, also, the localities are vague, or are not

* From Proc. Linn. Soc., New South Wales. Communicated by the Author.

stated. The result of this want of co-operation and of knowledge of the previous records is naturally that many facts get recorded twice or more; and that, notwithstanding a vast and comprehensive literature, it is not without the greatest difficulty that the actual nature of the known fauna can be ascertained. Cannot the southern entomologists (for they, of all, are perhaps the least systematic) unite and form a society, something on the lines of the Yorkshire Naturalists' Union, which shall devote itself to the collection and arranging of the published records relating to the South of England, and to the ascertaining and publishing of new facts, so that its members may see clearly what has been done and what has yet to be done each one in his own district, and may apply himself to the good work in an intelligent and enterprising manner?—T. D. A. COCKERELL; 51, Woodstock Road, Bedford Park, W., Dec. 16, 1885.

[The South London Entomological Society is engaged upon the compilation of a list of the insect fauna of Kent and other southern counties. Mr. Cockerell may obtain information on the subject by writing to the Secretary, 1 Denman Street, London Bridge, S.E.—J. T. C.]

NOTES FROM CHISLEHURST.—On September 30th I found a specimen of *Xanthia fulvago* (cerago) at rest on a rubbish-heap. The bright tints of this moth are probably assumed as a protection, on account of their resemblance to the colour of some autumnal leaves; the warm brown and yellow tints of autumnal moths generally are very noticeable. On Nov. 6th a specimen of *Chesias spartiata* (apparently new to the Chislehurst district) came to light, as also a specimen of the variety of *Hybernia defoliaria* represented in Newman's second figure (Brit. Moths, p. 105): would it not be more convenient to call this variety *suffusa*, a name which explains itself? for it does not seem to have been hitherto named, though it is as distinct as many other similar varieties. On Nov. 11th I took a typical example of *Hybernia defoliaria* at light.—T. D. A. COCKERELL; Bedford Park, W., December, 1885.

LEPIDOPTERA NEAR SOUTHAMPTON, &c.—The limited amount of entomological work I have been able to indulge in during the past season has not revealed any great abundance of insect life, and very few rarities have fallen to my lot. A few moths

emerged from the pupæ in my breeding-cages during the spring, including *Drepana lacertinaria*, *Numeria pulveraria*, *Zonosoma pendularia*, and *Anarta myrtili*. A couple of excursions during the warm weather at the commencement of June, in company with my friend Mr. W. D. Lindley, from Oxford, to Dychwood Forest and Streatley, resulted in the capture of *Thecla rubi*, *Nemeobius lucina*, *Lycæna astrarche* (*agestis*), *Melitæa aurinia* (*artemis*), *Strenia clathrata*, *Euclidia mi* and *E. glyphica*, and several others. *Melitæa aurinia*, so far from inhabiting a damp spot, occurred on the summit of the Streatley Downs. In this neighbourhood several insects, which usually appear in plenty, were very seldom to be seen, notably *Lymenitis sibylla*, *Argynnis paphia* and *A. adippe*. The reason occasionally alleged to explain the disappearance of insects, based on the numbers of entomologists who catch all they find, cannot apply here, for insect collectors are very few. As if to compensate for the scarcity of these insects *Iodis lactearia* and *Cabera pusaria* were perfect plagues in all the woods in which I collected. At Sandown, Isle of Wight, it gave me great pleasure to renew my acquaintance with the capricious *Colias edusa*; it occurred in some plenty, but within a very limited range, in a clover field beyond Red Cliff Fort, and I was somewhat disappointed in my careful search for *Lycæna bellargus* (*adonis*), which was only with great difficulty discovered amongst the swarms of *Lycæna corydon* and *L. icarus* on the chalk. Although last year I met with some success amongst the moths at Sandown, this year my captures were all more or less common insects: *Lithosia lurideola* (*complanula*), *Aspilates citraria*, *Eubolia bipunctata*, *Acidalia dimidiata* (*scutulata*), *Gnophos obscurata*, *Xylophasia lithoxylea*, *Leucania pallens*, *Miana furuncula*, and many others. With so many records of *Sphinx convolvuli* from all parts of the country, I should indeed be disappointed if I had not succeeded in obtaining an example. The only one that came to me was found by my sister here at Millbrook, on a window. A larva of *Acherontia atropos* was also given me. — H. E. U. BULL; January 4, 1886.

MACRO-LEPIDOPTERA NEAR WESTON-SUPER-MARE.—The past season has certainly been a better one for many insects than we have had for some years, at any rate in this neighbourhood. Entomologists, especially if they have any idea of visiting this

pleasant watering-place, may like to hear what was done last year with Macro-Lepidoptera by one who does not profess to have worked the place at all thoroughly. *Amphidasys strataria* (*prodromaria*) was the first fruits of zeal, followed in April by *Cidaria miata* (at Uphill) and *Xylocampa areola* (*lithoriza*). The latter laid eggs, and I found the larvæ very easy to rear. The month of May brought out *Anticlea nigrofasciata* (*derivata*), *Tephrosia biundularia* (or *crepuscularia*, for I do not think the two species can be definitely distinguished), *Larentia viretata*, and plenty of *Nola confusalis* at rest on tree-trunks; to which must be added larvæ of *Thera variata*, *T. firmata*, *Ellopiæ prosapiaria* (*fasciaria*), *Pæcilocampa populi*, *Tæniocampa munda*, &c. As summer came on, I took *Smerinthus tiliæ* (in the town), *Boarmia abietaria*, *Asthena blomeraria*, *Acidalia remutata*, *Cidaria suffumata* (very late), *C. dotata*, *Eurymene dolabraria*, *Melanippe albicillata*, *Emmelesia affinitata*, *Cidaria silaceata*, *C. prunata*, and others; and later on the following species were observed: *Triphæna fimbria*, *Melanippe galiata*, *Eubolia cervinata*, *Mesotype virgata* (*lineolata*), *Epione apiciaria*, and *Agrotis saucia*. *Agrotis vestigialis* (*valligera*), *A. tritici*, and *A. puta* are all common, and I have taken one *A. cinerea*. At ivy there were *Anchocelis lunosa*, *Epunda lichenæa*, *Agrotis suffusa*, *Orthosia macilenta*, *Xylina socia* (*petrificata*), *Polia flavicincta*, &c. At least fourteen species of *Eupitheciæ* occur here, including *E. abbreviata*, *E. dodoneata*, *E. lariciata*, *E. albipunctata* (at Hutton), *E. indigata* (single-brooded here), and *E. isogrammata*, which feeds exclusively on a small white-flowered clematis in gardens, the wild clematis not growing in the district. Among the best larvæ which I have taken last year were three *Notodonta chaonia*, one *Asteroscopus sphinx* (*cassinea*), three *Eugonia fuscantaria*, one *E. erosaria*, *Notodonta dictæoides*, *Asphalia ridens*, and, not least, five larvæ of *Acronycta alni*, three of which I took off one small alder tree growing in the street; the two others were found within a week of the same time, a mile or more away. But perhaps the best take of all this year was a fine specimen of *Heliothis armigera*, which I captured on ragwort bloom on the coast, August 29th. I might add many more species to this list, as I have in three years taken about 270 species of the Macros here without really working for them, including 30 of the Diurni.—(Rev.) G. A. SMALLWOOD; Southside, Weston-super-mare, January, 1886.

NOTES ON LEPIDOPTERA IN 1885.—The following extracts from my notes for 1885 may be thought worth notice. The first *Pieris* of the season I found on March 15th (a bright warm day), it was a *P. rapæ* (male). On March 22nd there were several inches of snow on the ground. I saw no other *Pieris* till March 30th, and after that not till April 12th. With respect to sugaring, my experience, so far as it goes, confirms that of Mr. Kane (Entom. xix. 1). I had no luck at all in the spring, and attributed it to the northerly winds and dry weather. I noticed that when *Arctia caia* was fed on lettuce the 'frass' was very conspicuous, being as large as small peas, very damp, and sometimes greenish in colour. It was in striking contrast to that of other larvæ of the same species, fed on less succulent and palatable food. *Hepialus lupulinus* was very abundant about here during June; several specimens were found in the house, and in the fields they literally swarmed. *Acronycta psi* appeared to be fairly plentiful. I have noticed that *Boarmia gemmaria* (*rhomboidaria*) and *Leucania pallens* (or an allied species)—but especially the first—are constantly to be found in the house. I presume that they are attracted by the light at night time. This autumn I found specimens of *Phlogophora meticulosa* as late as November 2nd and 10th. I have had a very curious experience with *Orgyia antiqua*. A larva of this was found on a geranium in our garden on September 16th; it pupated almost immediately, and the moth emerged about the middle of November, being either four months late or seven months early. It is a perfect specimen (male), but rather smaller, and of a deeper colour than the type. I am somewhat puzzled to account for this behaviour. As to larvæ, that of *A. psi* seems to have been abundant this autumn. Can anyone tell me if there are two broods of this? for I had one larva of it pupate by August 8th, and yet found others still in the larval state in October. Larvæ of *Phalera bucephala* have been in extraordinary abundance here, but they seemed to be very sickly, and the larger part of those that I collected died before pupating. I have noticed that larvæ of *A. psi* seem peculiarly liable to attacks of ichneumons. As to *Sphinx convolvuli*, a young friend brought me a specimen which had been found on the grass at Broxbourne on September 1st.—F. H. PERRY COSTE; 15, Bruce Grove, Tottenham, January 10, 1886.

PIERIS RAPÆ AS A COLONIST.—Dr. John Hamilton, in a notice of the insects occurring at Brigantine Beach, New Jersey (Canad. Entom. xvii. 202) says:—" *Pieris rapæ*, Lin., is abundant, though cabbage is little cultivated. I found over a dozen of the pupæ on the beach under a small board, and, on searching for the food plant, discovered the larvæ had fed on the *Cakile americana*—a curious maritime plant, which, though belonging to the Cruciferæ is very remote from the cabbage."—[J. T. C.]

VANESSA C-ALBUM NEAR WELCHPOOL.—Perhaps it is of interest to know that *Vanessa C-album* has been captured here several times this year. About September 20th a friend brought me one which he had captured on a cold windy night in a sheltered ditch. I took one early in October flying over the flowers of Alyssum, and my brother saw another.—STANLEY P. JONES; Westwood, Welchpool, December 5th, 1885.

MELITÆA AURINIA IN SHROPSHIRE.—On May 8th, 1884, I received from Church Stretton, in Shropshire, eleven dozen of *M. aurinia* (*artemis*) of various sizes, many about full-fed. The Rev. R. J. Buddicombe, who kindly sent me them, informed me that the roads and fields swarmed with them, and had swarmed for at least five weeks, but he did not think the space of ground they infested was very large. I supplied the larvæ with broad and narrow-leaved plantain, germander, primrose and violet leaves, on none of which they attempted to feed, so then gave them sprays of honeysuckle, which they immediately began to devour and thrive upon well. The first changed to a pupa on May 12th, followed by others pupating every day for over a month. The first imago emerged on June 8th, others emerging daily for about a month, and by the middle of July ninety had emerged in perfect condition; they varied much in size and colour. The average time they remained in the pupal state was twenty-five days. Only five out of the eleven dozen larvæ had ichneumons. I mention this as Newman, in his 'British Butterflies,' remarks that nine out of every ten of the larvæ of *M. aurinia* under his observation were infested with ichneumons. The larvæ of ichneumon emerged from the full-fed *M. aurinia* larvæ, and spun little whitish cocoons round their victims, which produced the perfect ichneumons on June 14th, 1884. Is honeysuckle an usual food-plant of *M. aurinia*?—F. W. FROHAWK; Park Place, Eltham, Kent, November, 1885.

CHÆROCAMPA CELERIO IN SUFFOLK.—I can add one more to your numerous records of the occurrence of this species, as the Rev. W. M. Hind, LL.D., the Rector of Honington, near Bury St. Edmunds, informs me that one was taken on September 19th in that Parish.—E. N. BLOOMFIELD; Guestling, January 13th, 1886.

ACHERONTIA ATROPOS AND VANESSA IO.—Unusually abundant this year in the midlands.—W. HARCOURT BATH; Birmingham, November, 1885.

NOTODONTA DICTÆA IN AUTUMN.—On July 26th of this year I found a full-fed larva of *Notodonta dictæa*. On the following day it spun a cocoon between some poplar leaves; and on Saturday, August 22nd, the imago appeared. In Newman's 'British Moths,' May is given as the date for the appearance of the moth, and I think it rather strange that this specimen should have emerged in August when it was not forced.—G. H. GRIFFITH; N. H. S. United Services College, Westward Ho! North Devon, November, 1885.

[This is not an uncommon occurrence, both *N. dictæa* and *N. dictæoides* being frequently taken at light in the autumn, especially at suburban lamps.—ED.]

CARADRINA AMBIGUA AT DEAL.—I have great pleasure in recording the occurrence (last August) of a specimen of *Caradrina ambigua* at Deal, thus adding another to the already long list of rarities captured in that district. Can any reader of the Entomologist inform me whether the females of this species have white hind wings or not? If so, I shall be greatly obliged.—J. W. TUTT; Rayleigh Villa, Westcombe Park, Blackheath, S.E., January 15, 1886.

URTICATION BY BOMBYX RUBI.—I have long noticed the urtication of the larvæ of *Bombyx rubi*. When I was a child I never could handle them without getting small white blisters like nettle-stings, but I found it was only the short hairs which stung; they came off and remained sticking in my hands, while the long hairs seemed quite harmless. I have observed the same with *B. quercus*, but in a lesser degree.—M. S. JENKYNs; Riverside, East Molesey, January, 1886.

VARIETY OF CABERA PUSARIA.—On visiting my pupa room early on the morning of June 6th last a recently-emerged Geometer,

sitting on the glass of one of the cages, so utterly puzzled me that I at first thought it must be a new species. It turned out to be a most beautiful and striking variety of *C. pusaria*, with no white about it except on the fringes and thorax. I feel inclined to call the ground colour black, but I suppose it should rather be termed sooty. The transverse lines are traceable both on the primaries and secondaries. I beat the larva from *Alnus glutinosa* in the autumn of 1884. — GILBERT H. RAYNOR; Shenfield, Brentwood, January 16, 1886.

VARIETY OF *ABRAXAS GROSSULARIATA*.—I enclose an accurate drawing of a very beautiful variety of *Abraxas grossulariata*, female, which has just come into my possession. The figure is the natural size. The thorax and abdomen are orange, devoid of any markings whatever. The light band across the upper wings is dirty yellow. The dark markings are black. The remaining colour is pure white. The marginal markings are hardly visible. It will be observed that the right half differs from the left, the former having twelve black spots, the latter only eight. The band on the right upper wing is also broader, and differently shaped. This very beautiful specimen was captured in August, 1885, at Combe Dingle, in this county, by Master F. S. Coles.—J. GREENE; Rostrevor, Clifton.



HYPSIPETES TRIFASCIATA NOT DOUBLE-BROODED.—In the Entomologist, vol. xviii, p. 322, I am made to say that *H. trifasciata* (*impluviata*) is double-brooded. This is a mistake, and I intended the remark to apply to *Thera variata*. I am not aware that *H. trifasciata* has a second brood.—J. B. HODGKINSON; Preston, Lancashire, December, 1885.

ABSENCE OF *CIDARIA RETICULATA*.—I took two journeys last season for *Cidaria reticulata*, and although I made most careful search for the larvæ I found no trace of it, or, indeed, of any of the balsam seeds being eaten. The plant was last year in plenty, and remained in many instances in flower so late as the middle of October.—J. B. HODGKINSON; Preston, Lancashire.

NEPTICULA MYRTILLELLA FEEDING ON POLYPODY.—When collecting the larvæ of *Nepticula myrtillella*, in the locality where I

have taken it for years past at Windermere, I found the larvæ of this species also mining the leaves of a small fern (*Polypodium*), the fronds of which were mixed with the *Vaccinium*, the two plants growing side by side.—J. B. HODGKINSON; Preston, Lancashire, January 6, 1886.

LEPIDOPTEROUS EGG-PARASITES.—I thought the seven parasites which I bred from a single egg of *Bombyx trifolii* was rather startling; but I should not have been so startled if I had read the paper, written by Mrs. A. K. Dimmock, Cambridge, Mass., and published in 'Psyche' for April—June, 1885, p. 282. The author says:—"The egg of *S. excaecatus* often harbours very minute hymenopterous parasites; more than thirty of these Hymenoptera sometimes emerge from a single egg of *Smerinthus*, a fact that will give an idea of their microscopical minuteness." The killing and setting of *Telenomus phalænarum* from *B. trifolii* tried my patience; what would it have been with those mentioned above.—G. C. BIGNELL; Stonehouse, Plymouth, Dec. 10, 1885.

STRIDULATION OF PUPÆ OF ACHERONTIA ATROPOS.—Having had last season a number of the larvæ and pupæ of *Acherontia atropos*, I paid some attention to the manner in which is produced the squeaking noise in the larva, pupa and imago stages of its life. I only heard the snapping sound made by the larva on two or three occasions, and I believe it is produced by gnashing the mandible. The sound produced by the pupa I heard on December 17th by pressing the thorax of a doubtful pupa. Thinking the moth could not release itself from the pupa case, I removed the covering from the eyes and tongue. The sound was then repeated, and by watching I found that the extended tongue was raised in the middle in the form of a bow, and divided at the same time from the mouth nearly to the lip, and then being quickly depressed and closed, the sound appeared to be produced by the junction of the two tubes. I think that the sound made by the imago is produced in a similar manner with the tongue rolled. I should like some other entomologist to experiment with the pupa as I did, and let us know the result.—W. T. PEARCE; 42, St. John Street, Buckland, Portsmouth, Dec. 26th.

SOUND PRODUCED DURING FLIGHT OF SPHINGIDÆ.—I am very much inclined to believe all the Sphingidæ are capable of producing a more or less audible sound. I particularly noticed a

fine female *Sphinx ligustri* one evening last summer, which had apparently been ovipositing on a privet hedge before I alarmed it. As I stood, the top of the hedge—a rough untrimmed one—was just about level with my ears. Instead of flying away when disturbed, the moth circled round repeatedly just above my head, and every time she came over the hedge in her wheelings she hovered above the spot where she seemed to have been depositing her eggs, and remained poised in the air for several seconds, the rapid vibration of her wings producing a loud humming noise so distinctly audible that I stood still to listen to it. I remained motionless close to the hedge for several minutes, during the whole of which time the moth continued her wheeling flight. She seemed to be angry at my presence, and the noise she made was very similar to that of an enraged bee, but louder. As I persisted in watching her the sound became shriller in tone, evidently occasioned by vibrating the wings with greater rapidity as excitement increased, until at length I began to wonder whether it was indeed a *Sphinx ligustri*, and therefore captured it with my net to satisfy myself.—ALBERT H. WATERS; Mill Road, Cambridge, January, 1886.

URTICATION BY LARVÆ OF BOMBYX RUBI.—In a note under this heading, which appeared in the December number of the 'Entomologist' (xviii. 324), the writer says, "This is the first case I have noticed of this species causing this irritation." I may mention that a similar case came under my notice last summer. My sister and a friend brought me a large number of these larvæ, which they came across while hunting for ferns in Glen Lean, Argyllshire. The effect caused by the hairs of the larvæ upon their hands was as though they had been stung by nettles, and lasted for several days. This is the more remarkable considering that both the young ladies wore thick driving-gloves at the time. I have never felt any inconvenience myself after handling the larvæ of this species; though I have noticed a slight irritation after handling the cocoons of *B. quercus*.—FRANK R. JEX LONG; 11, Donne Terrace, Kelvinside, Glasgow, Dec., 1885.

MOTH TRAP.—If any of your readers possess such a trap as is recommended on p. 36 of 'The Field Naturalists' Handbook,' I should be pleased to hear of their experiences with it. I have tried mine, which is made exactly according to the one depicted in the above-mentioned book, wet or fine, and with its front

turned in divers directions, almost every night from June to October. The result has been *nil*, with the exception, I believe, of one solitary gnat. Perhaps I have made some mistake in the management of it; if so, I should only be too glad to know how to rectify it. I do not wish to detract from the trap any merits there may be; but having, so far, met with no success, and being at a loss to understand the reason (having a powerful reflector and lamp, and setting the trap on a wall about twelve feet high, overlooking my father's grounds, and one would think in a very good locality), I venture to write to see if any of your numerous readers have met with any success in using it; and if so, how?—A. E. HALL; Norbury, Pitsmoor, Sheffield.

AN ATTRACTION FOR BUTTERFLIES.—Two clumps of *Sedum telephium* in my garden have proved a great attraction to the *Vanessidæ* during the month of August. Although a small garden, within a short distance of paved streets, I have seen at one time one *V. cardui*, three *V. atalanta*, and half a dozen *V. urticae* on the same plant.—H. MILLER; Ipswich.

AN ENTOMOLOGICAL RIP VAN WINKLE.—I am in a fix among my captures of last year; I have a few species of Tortrices, Tineæ, &c., for which I can find no description of in the books I have, *viz.*, 'Stainton's Manual,'—to my way of thinking the best book ever written to name species by, the "tables" and short pithy descriptions are so much to the point,—Wilkinson's 'Tortrices,' Newman's 'Moths,' and Stainton's 'Natural History of the Tineinæ,'—thirteen vols. of this last, and I much fear we have had the last of that most valuable work, for it is now over seven years since I received my last vol. (alas! that it is so),—and the 'Annual,' too, has also stopped. Pray forgive my lamenting, but I feel something like an entomological Rip van Winkle, for I have been asleep, so far as insects are concerned, these last five and twenty years, and on waking up I find things changed indeed,—new names to old familiar species, others have got their own again, and—horror of horrors—black pins! They are ugly, have bad points that are weak and turn up, or very thick and blunt. Fancy pinning *Nepticula* and such like with them! No. 20 black pin has a point as thick as a No. 1, and then their temper—they have none; but they have done something towards spoiling mine! Then an exchange list, almost

on the lines of an "Exchange and Mart." Very little of the good old give-and-take system left, but too much barter, and the sending of old, mity, badly worn and badly set insects, as if some people thought that anything will do to exchange. I suppose, however, we must take the world as it comes; but I am proud to find there are many good men and true to make up for the mean and greedy, and those of my old, old friends whom I can find are still alive are the truest of all! I fear I stray from my original intentions in writing; it is that we sadly want a supplementary Manual to follow up where Stainton left off, with descriptions of the new species since that time. Surely there are men willing and able to supply this want. I suppose there are descriptions of these new species somewhere in the magazines, and in 'Proceedings,' but how is one like myself to get at them? and worse still is it for beginners.—W. FARREN; 14, Kings Parade, Cambridge, December 30, 1885.

COLLECTION OF ECONOMIC ENTOMOLOGY.—Miss E. A. Ormerod writes as follows in the Report of the Consulting Entomologist of the Royal Agricultural Society for 1885:—"By desire of the Lords of the Council of Education, I have undertaken to superintend (as far as my other duties allow) the re-arrangement of a portion of the valuable collection illustrative of injurious insects and their ravages, known as the 'Collection of Economic Entomology' of South Kensington, with the view of making it of practical service to farmers and all interested in the matter. By placing the pests of the various crops, cattle, &c., respectively together in cases distinguished by the English name of the crop or animal attacked, I believe the large collection will become of great public service, and I may add that a portion of the rest of the work is in the skilled hands of Professor Westwood."

LEPIDOPTERA OF SUFFOLK.—For some years past I have been collecting information towards a list of the Lepidoptera of Suffolk, and hope to print it shortly. I should be greatly obliged if any of your readers could supply me with lists of recent captures made by them in that county.—E. N. BLOOMFIELD; Guestling Rectory, Hastings, January 13, 1886.

ERRATA.—Entom. xix. p. 14, line 4, for Palladolid read Valladolid; p. 19, line 2, for 1885 read 1855; p. 21, line 10, for Satyridæ read Salatura.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. — *January 20th, Anniversary Meeting.*—Robert McLachlan, F.R.S., President, in the Chair. An abstract of the Treasurer's accounts was read by Mr. Stainton, one of the Auditors; and the Secretary read the Report of the Council. The following gentlemen were then elected as the Council for 1886:—President, Robert McLachlan, F.R.S.; Treasurer, Edward Saunders, F.L.S.; Secretaries, Herbert Goss, F.L.S., and William Ward Fowler, M.A., F.L.S.; Librarian, Ferdinand Grut, F.L.S. Other members of Council, T. R. Billups, Edward A. Fitch, F.L.S., F. DuCane Godman, M.A., F.R.S., W. F. Kirby, E. B. Poulton, M.A., F.G.S., H. T. Stainton, F.R.S., Samuel Stevens, F.L.S., and J. Jenner Weir, F.L.S., F.Z.S. The President delivered an address, and a vote of thanks to him was moved by Mr. Stainton, and seconded by Mr. Pascoe, and the President then replied. A vote of thanks to the officers was moved by Mr. Dunning and seconded by Mr. Distant, and Messrs. Saunders, Fitch, Kirby and Grut replied.—H. Goss.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*January 21st, 1886.*—R. Adkin, F.E.S., President, in the Chair. Mr. Frohawk exhibited specimens of the curious ichneumon *Alysia manducator*, Panz., bred from the coleopteron *Creophilus maxillosus*, L. Mr. Billups exhibited male and female specimens of *Sirex gigas*, L., belonging to the family Siricidæ, and remarked that the larvæ were very destructive to wood, more especially fir plantations, and cited many instances to show the great rapacity and strength of the mandibles of these destructive creatures. This gentleman also exhibited specimens of the ichneumon *Rhyssa persuasoria*, a species parasitic on the *Sirex*. Mr. South exhibited specimens of *Noctua castanea* (*neglecta*) from the New Forest and two localities in Perthshire, and said those from the New Forest were gray, with an ochreous tinge, and were the true *neglecta*; whilst those from Perthshire were either gray with a reddish tinge, or of a decided chestnut colour, the chestnut-coloured specimens being the *castanea* of Esper, and the reddish tinged gray examples connecting the true-named forms. Other interesting exhibitions and remarks were made by various members.—H. W. BARKER, W. A. PEARCE.

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EDITORIAL ANNOUNCEMENT.

IT is with much pleasure that I have to announce, with the hearty concurrence of my colleagues, the addition of the name of Mr. Richard South, F.E.S., to the list of entomologists who have so long and so kindly acted as a committee of aid and reference, during the period I have held the position of editor of this Magazine.

This being a fitting occasion, I should fail in my obligation to those gentlemen, if I neglected to avail myself of the opportunity to express my personal thanks to them, for the manner in which they have at all times readily given that cordial support which has contributed so largely to the continued and increasing success of the 'Entomologist.' I would further express my gratification, that although we have been thus associated for nearly ten years, until now one change only has occurred in our editorial staff, namely, the loss, by death, of our much esteemed friend, the late Frederick Smith.

To introduce Mr. Richard South to our readers would be an act of supererogation on my part. He is so well known, through his independent and careful investigations into the natural history of certain groups of European insects, and the excellent work he has done in the cause of systematic nomenclature of the British Lepidoptera, that the acquisition will be welcomed as a guarantee for further interesting communications from his pen.

I have also to thank our very numerous contributors for their substantial assistance, and to remind others who write less

frequently, that even small records, or notes, are always of interest to some: while their publication frequently develops friendly controversy, from which facts of value may be elicited, tending towards an increased knowledge of the economy of the great class Insecta.

JOHN T. CARRINGTON.

Savage Club, Savoy, London, W.C.,
February, 1886.

LYCÆNA ARGIOLUS BOTH MONOGONEUTIC AND
DIGONEUTIC.

BY J. JENNER WEIR, F.L.S., F.Z.S., V.P.E.S.

Lycæna argiolus is, to my mind, the most interesting butterfly we find in England; for many years I have paid great attention to the habits of the species, and my last communication on the subject may be found in the 'Entomologist' for 1884, pages 193 to 197.

Mr. Harcourt Bath's note (Entom. 13) was very welcome to me, confirming, as it did, my own experience, that where the holly alone was found, *L. argiolus* was single-brooded or monogoneutic, and that when the insect fed as a larva upon the ivy alone, or perhaps upon both holly and ivy, it becomes double-brooded or digoneutic. I wrote to Mr. Harcourt Bath, and, finding from him that he proposed to send a further account to the 'Entomologist,' I waited till he had done so before again taking up the matter.

In the case of *Pieris napi*, and in the American species closely allied to *L. argiolus*, whether they are monogoneutic or digoneutic appears to depend entirely upon the length and warmth of the summer months in their habitats; this fact was particularly dwelt upon by me in my communication to the 'Entomologist' in 1884 (Entom. xvii. 193), so far as the latter species was concerned; with regard to the former species, *Pieris napi*, v. *bryoniæ*, the alpine form, is single-brooded, and in Lapland and the Arctic regions it is also monogoneutic. All this is clearly understandable on Weisman's view—that *Bryoniæ* is the original form, and that by the amelioration of the climate a summer brood has been interpolated.

But this explanation will not meet the case of *L. argiolus*

under consideration; it is here no question of climate, but apparently simply of food; the problem has for a long time occupied my thoughts, and I venture to offer an explanation. An insect feeding either on the bloom, buds, or tender shoots of the holly only must be single-brooded, as that tree makes its growth in the early months of the year; and the hard leaves, which alone would be on the tree at the period of the summer emergence in July and August, would probably be not succulent enough for the small larvæ then produced from the ova.

The ivy, on the other hand, makes shoots not only in the spring, but during the whole of summer; and even as late as October growth has not ceased, as I have found to be the case with some forty varieties of ivy I have cultivated for more than thirty years.

I believe that the holly and ivy are considered to belong to the remains of the old miocene flora, and it is probable that the ancestors of *L. argiolus* may have fed on the trees from which these two species have been respectively phylogenetically derived. However this may be, I think it may be taken for granted that at one time *L. argiolus* was single-brooded, and that the summer brood has been acquired, as in the case of *Pieris napi* before-mentioned.

Now, what would occur if *Pieris napi* was deprived of all food for the larvæ produced from the ova of the second emergence of the imago? Many would say the species would cease to exist. I say no, it would not, for this reason: all who have had to do with double-brooded insects know perfectly well that many of the pupæ of the summer brood do not produce their imagines, say, in July or August, but, on the contrary, they remain in the pupa-state till the proper period of emergence in the next spring arrives. This is certainly true of *P. napi*, and the fact is adverted to by Weisman.

In this very genus *Lycæna* I have thought that *L. bellargus*, although double-brooded, is very much rarer on the wing in July and August than in June, and that probably many pass the winter in the pupal as well as in the larval state. I do not feel quite certain that the same race of *L. argiolus* feeds both on the holly and ivy; it is more probable that we have two races—one monogoneutic, confined to the holly, and the other digoneutic, feeding on the ivy. Both the late Mr. Buckler and

Mr. Hellins found that in captivity the larvæ eating the ivy were more advanced than those feeding on the holly, although from the eggs of the same female (Ent. Mo. Mag. xiii. 29); this fact is very remarkable, for it would seem that those which must be single-brooded, if holly-feeders only, come more slowly to maturity than those which might be double-brooded, the ivy-feeders.

To sum up: my hypothesis is that *L. argiolus* is digoneutic when feeding on the ivy, even if entirely confined to that plant; that it is monogoneutic when feeding on the holly alone, and that even if it had become digoneutic, the failure of a supply of food for the larvæ produced by the imagines of the summer emergence would not necessarily destroy the species, inasmuch as some of the pupæ would remain over till the next spring before their emergence took place, and a gradual elimination of the digoneutic condition would be brought about.

I may remark, in conclusion, that it appears the larvæ have been found by Mr. Harwood, of Colchester, on the flowers of *Rhamnus frangula*; this shrub would bloom about the same time as the holly, *Ilex aquifolium*: and by Mr. G. F. Matthew, R.N., on the flowers of the *Escallonia* in June ('Larvæ of British Butterflies and Moths,' Ray Soc., 1886, pp. 96 and 100); the latter shrub, with me, blooms later than the holly, so that these larvæ might have first fed on the tender shoots, not on the flowers, which must always be the case with the summer brood of those feeding on the ivy, *Hedera helix*, as the latter plant blooms late in the autumn.

Chirbury, Beckenham; February, 1886.

DESCRIPTION OF *CRAMBUS CANTIELLUS*, MIHI, A
CRAMBUS NEW TO SCIENCE.

By J. TUTT.

IN response to my request (Entom. 29) for specimens of *Crambus contaminellus*, Mr. W. H. B. Fletcher, of Worthing, has been kind enough to send me a very fine bred series of *Crambus contaminellus* from the south coast; and side by side with my series of the *Crambus* captured at Deal, as described in this magazine as above referred to, there can be no shadow of doubt about their distinctness.

With this series for comparison, I find that all the differences pointed out by me (Entom. 28) hold good, but that No. 3 wants modifying, as *C. contaminellus* does vary in its ground colour, though within very narrow limits.

Still the differences are so great that no one, having seen the two species side by side, could possibly confuse them, and the mystery to me is how the new species has escaped detection so long. I am pleased, therefore, to confirm my previous opinion as to the novelty of the species, and beg to append the following description:—

Exp. $8\frac{1}{2}$ "—11". Head and palpi grey, the palpi very distinctly dusted with dark grey. Antennæ simple in both sexes, but in the males thickened towards the base. Thorax and abdomen pale grey, the thorax in some examples much dusted with dark brown scales, and varying in depth of colour according to the colour of the anterior wings. Anterior wings variable in breadth and narrow for a *Crambus*, very acute at the tip, the female having the tip much prolonged. Colour very variable; in males, generally pale grey, but varying to deep mahogany-brown and black; the females are much paler, and consist of two forms, pale straw-colour (which seems rare) and very pale grey (the type).

The anterior wings have two dark transverse lines; the one nearest to the thorax, commencing just below the centre of the costa (not on it), is produced obliquely towards the thorax, till about half-way across the wing, when it is continued at a much more acute angle (still pointing towards the thorax), until it reaches the inner margin very near the thorax.



Anterior wing (about twice the natural size).

At the angular point of this line a very small longitudinal line commences, and is continued for a short distance towards the hind margin. The second line is a doubly angulated line before the hind margin. It commences on the costa, about one-third from the tip of the wing, is sharply elbowed as soon as it commences, the elbow pointing towards the hind margin, and is again sharply elbowed in the opposite direction just above the anal angle. The fringe of the fore wings is dark gray (not glossy); at the base of the fringe are a series of minute black dots running round the whole of the hind margin. Posterior wings grey, with very pale fringes.

As it seems very improbable that the insect has been before described, and is thus without a name, I beg to propose that we name it *Crambus canticellus*. Kent has produced so many good species, and entomologists have had so many hours of real pleasure in its woods and on its hills, that I think none will find it objectionable to name this *Crambus* after a county in which much of our leisure has been spent.

Rayleigh Villa, Westcombe Park, Blackheath, S.E., January, 1886.

THE LEPIDOPTERA OF NORTH KNAPDALE, ARGYLLSHIRE.

BY JOHN MACKAY, F.P.N.S.

A VERY interesting article appeared in the 'Entomologist' (Entom. xviii. 229), by Mr. Howard Vaughan, on the "Lepidoptera of North Knapdale, Argyllshire," in which the writer gave a brief account of his collecting experiences in that district, in the month of June. Comparatively little seems to be known of the Lepidoptera of this rather remote place, and every item of information on the subject is valuable on that account. It fortunately happened that Mr. Vaughan visited Knapdale in June last year, and as I spent nearly a fortnight collecting in the same neighbourhood in July, our respective lists of captures will help to contribute some slight knowledge of the Lepidoptera peculiar to this district during those months.

Kilmartin, the place where Mr. Vaughan stayed, is situated some miles distant from Tayvallich, the little secluded village where I spent my holidays. Tayvallich, or Tigh-a-Bhealaich, as it is sometimes called, is some thirteen miles distant from Ardrishaig, and can only be reached by means of the carrier's gig, which serves to keep up communication between the two places. The village, which is beautifully situated, consists of only some thirty odd cottages, and is bounded in front by a broad bay, which forms part of Loch Sween, and a short distance behind by Carsaig Bay, beyond which is the Sound of Jura. On either side of the village are high hills covered with birch plantations, while near at hand are plenty of moorland and peat moss, which should produce many plants and Lepidoptera

peculiar to such localities. Above all, it is one of those few delightful spots where the enthusiastic entomologist can pursue his favourite study to his extreme satisfaction, without having a wondering crowd gathered round him, expressing sympathy for the "poor deluded body." It is a country of few inhabitants, which, perhaps, can be accounted for by the number of roofless cottages one notices all around, the scenes of evictions in times past.

On the day of my arrival I found extremely comfortable lodgings in the house of the schoolmaster, and in the evening I took a short walk to see what insects were to be found. I netted some nice specimens of *Acidalia fumata*, *Metrocampa margaritata*, *Cabera pusaria*, *Larentia viridaria* (*pectinitaria*), and a few *Micros*, but as the evening was not very favourable, I deferred operations until the following day. I was advised to try a large moor, a short distance from the schoolhouse, and on visiting the place was delighted to find insects flitting about in great abundance. I never before saw so many butterflies frequenting one spot; they were literally in hundreds. Of course they were almost all common species, such as *Epinephele ianira*, *Lycæna icarus* (*alexis*), *Cænonympha pamphilus*, but I soon found that *C. typhon* (*davus*) was also pretty common on the moor, although it was rather difficult at first to distinguish it from the large specimens of *C. pamphilus*, which were so plentiful. *Argynnis aglaia* would occasionally come flitting along the roadside, and alight on a thistle-top, thus affording a most tempting prize to the eager entomologist, but one not always gained. Once missed, it was off and away across the moor. While searching for *C. typhon* I started up a good many specimens of *A. fumata* from amongst the grass, and these I quickly netted. In a ditch which bordered the moor I took a number of *Hydrocampa nymphæata* and *H. stagnata*; while in a grassy spot near some trees I netted two badly-rubbed specimens of *Argynnis selene*, at which place, doubtless, it was common a short time before. The specimens of *C. typhon* which I captured presented a great variety of colour. Some of the specimens were quite as dark as those taken in the Yorkshire moors, while others were of the usual Scotch form, almost white in colour. There was a complete graduation in colour between the two types. Some of the specimens of *Lycæna icarus* were very pretty; in some of the females the wings

presented an almost burnished appearance, and they were totally unlike any other specimens I have ever seen.

During this and the following evenings I usually collected on the road bordering a birch wood, and was fairly successful. On the grass *Zanclognatha grisealis* was fairly common, and *Hepialus hectus* was flying over the brackens in great abundance. Among the trees *Cidaria immanata* and *Larentia viridaria* were occasionally netted, and one evening I took two badly-rubbed specimens each of *Boarmia repandata* and *B. gemmaria* (*rhomboidaria*). Freshly emerged specimens of *Crambus pinellus* were not uncommon, but what caused me most surprise was the capture of a pretty specimen of *Lithosia lurideola* (*complanula*). I have never heard of this insect being taken so far north, and should like to hear if any of your readers have ever taken it in the Highlands. I also saw a few specimens of *Nudaria mundana*, but it was not common. *Anaitis plagiata*, *Emmelesia albulata*, *Coremia designata* (*propugnata*), *Larentia cæsiata*, were also among my captures.

It will be noticed in this list that I do not mention having captured any specimens of Noctuæ. I tried sugaring several times, but it was a total failure. In fact, I may say that the only Noctua I saw during my whole stay was a specimen of *Plusia pulchrina* (*v-aureum*) which I startled up from the grass and captured. There was a complete dearth of Noctuæ; and yet I took a large number of Noctua larvæ feeding on some plants on the moor.

The above is a pretty complete account of my entomological experiences, but as I was a total stranger to the locality, and did not know the best places to search, it follows that many other species may occur in the district than those I have mentioned.

One afternoon, along with some friends, I paid a visit to a place called Taynish, and on the way we passed a large peat-moss, about which dragonflies of all sizes and colours were darting in great abundance. Although I do not collect Neuroptera, I could not help capturing a number: for anyone who studies this group it would be worth while to visit Knapdale; he would be surprised at the number of dragonflies which frequent every pond and bit of water. Here a botanist will find as many splendid specimens of the royal fern and the hart's-tongue as he would care to carry, while many rare ferns are to be found in great plenty. Splendid

fresh and salt-water fishing is also to be had. One evening I accompanied some friends out to fish in the Sound of Jura, and we had hardly commenced work when a large whale was seen making its way up the sound. It was the first time that I had seen a "real live whale," and need not add that the sight was one which I shall not soon forget.

I intend going to Tayvallich again this season, and hope to have a much larger list of captures to report. Should any of your readers intend visiting this district in July this year, I shall be pleased to hear from them, and shall be glad to give the benefit of such little knowledge which I may possess of the district.

78, Gloucester Street, Kingston, Glasgow, January 23, 1886.

LIFE-HISTORY OF *ASTEROSCOPIUS NUBECULOSUS*, Esp.

BY HERR AMELANG.*

APPEARING in March, *Asteroscopus* (*Petasia*) *nubeculosus* is one of the first moths of the new year. On looking at my diaries, I find that from 1881 to 1885 I took twenty-eight males and twenty-four females. In fair weather the moth sits, about breast high, on old birch trees, squeezing into clefts in the bark, in the warm rays of the March sun; its resemblance to the grey-green cracked bark of the tree probably protecting it from attacks of birds. In March, 1885, I was out one cold stormy afternoon, and could not find a single specimen, though I searched carefully. I had looked several times through the same birch wood, always expecting to find the moth breast high on the stems of the trees, when at last I espied a specimen close to the ground, amongst the cracked bark; I at once searched farther, and captured nine of them in half an hour. The moths had deceived me this time; not liking the cold north-east wind, they had ensconced themselves close to the ground where they were sheltered by the long grass.

In 1883, on the afternoon of March 21st, when there was a strong east wind, a temperature of minus 8° Réaumur (14° Fahrenheit), and the ground was frozen about two inches below the surface, nine specimens, four males and five

* Translated from the Berlin 'Entomologische Nachrichten,' February, 1886.

females, were captured; next morning, after a slight fall of snow in the night, I caught three more males in the same locality. All the twelve (seven males, five females) were put in one cage to breed. The males were much excited, and sought the females eagerly; pairing quickly followed, and only lasted a few hours. I noticed that they flew towards the lamp which was in the room. Eggs were laid the same night. The female extends the ovipositor and feels about with it until a favourable place for laying is found; she deposits the eggs singly, but often lets a little heap of twelve or so fall into the cracks and corners, and thus the business of laying is soon over. She lives for some time after, as long as thirteen days I noted, but does not move about at all. This species is always found singly, two hardly ever appearing on one tree, and the female flies about in the cage while laying her eggs; thus I conclude that she would fly fast in the open air, rushing in and out among the birch branches, and laying her eggs singly, about a yard above ground; for the larvæ always try to climb higher as soon as they emerge. The numbers of eggs deposited by the five females respectively were 300, 271, 217, 200, and 180; hardly 3 per cent. were infertile.

The EGG is hemispherical, and very soft, hardening in about eight or nine days, the colour changing from light green to violet and dark brownish grey, almost to chocolate. As soon as the colour changes from light green to dark brown, which it does by degrees, the surface of the egg becomes sprinkled with little brown dots, like grains of sand, which finally coalesce and disappear in the grey-brown.

The LARVA emerges in about twenty-eight to thirty days; its length is then about 2 mm., colour dull green with brown head; a week later it measures 7 to 8 mm. and turns a darker green. Immediately on emergence it begins to loop, and after devouring the egg-shell (which frequently does not take place), it tries to climb up higher. The larva spins diligently while young, hanging on to the stems and leaves; it eats away the upper side of the latter, so that numbers of young birch leaves have nothing but the veins left. The first change occurs in five or six days, when the caterpillar assumes a darker green, and can scarcely be distinguished from the green of the birch leaves. After the second change it becomes still darker, the claspers turn black, and the

head is whitish. It now lives chiefly on the under side of the leaves, spinning itself there firmly; it eats the leaves from the edge inwards, and rests head downwards while feeding. If disturbed it raises itself, like the larvæ of the Sphinges, and beats about with the upper part of its body; when touched it emits from its mouth a green transparent fluid, of bitter taste, resembling that of the birch leaves. After the first change the caterpillar devours the cast skin, which hangs like a white rag spun to the leaves. Until the second change it is usually remarkably lively and active, but less so as it becomes older, and the full-fed larva is sluggish and lethargic. It then sits with the upper part bent far forward, after the manner of the Sphinges, but always turned in a downward direction. When a large number are together in one cage they disagree, especially as they get older; they bite each other, and the wounded ones die in a few days. The birch (*Betula alba*) is their favourite food, but they will also eat buckthorn, hornbeam, elm, and guelder-rose. Before pupating the larva becomes restless, wandering all over the cage; it eats little or nothing, and loses the beautiful green colour, becoming a dirty grey or brown; finally it buries itself about a foot deep in the earth. It lies there curled up, for twelve days, before turning to a chrysalis.

PUPATION takes place in the first half of June, and often lasts into the second year. I have opened pupæ in June of the year following pupation, and found the moth perfectly developed and alive, though it would have stayed nine months longer in pupa. I have observed similar cases with *Panolis (Trachea) piniperda*. The regular appearance of the perfect insect in March is very remarkable. According to observations in my diaries I have only twice found it in April: on April 4th, 1881, I took a male of a rich brown colour; and on April 11th, of the same year, a crippled male on a hornbeam, by the flooded bank of the Mulde. The chrysalis had long been below high-water mark, but was not injured; water had interfered with emergence, however, and thus caused deformity. The pupa is very strongly made, and provided with two anal hooks, by the help of which the moth inside the case works its way up out of the earth. The appearance in March, 1883, was most remarkable: in spite of the extreme cold (14° Fahrenheit), in spite of snow and hard frost, the pupa worked itself out of the warm ground, the moth burst its case, and,

developing perfectly (for no cripples were found), flew out joyfully into the wintry world. I have this year observed a second copulation in the case of one male, which, after pairing once, paired again the same night with a freshly-caught female. Out of the 190 eggs produced by this female 57 were infertile.

The moth frequents sparse birch woods; when there is much undergrowth it chooses the outside trees, for it likes room to fly; in 1881 I found a male on a poplar tree, at least 2000 yards away from the nearest birch wood, thus proving his powers of flight. It seems to prefer birch woods which stand on damp sandy ground, for it seldom frequents birches growing in meadow ground, unless liable to flood.

It seems improbable that this moth lives on sweets; its proboscis is only 3 mm. in length, and in March there are but few flowers in bloom. I offered some honey to the male which had fertilised two females, but I did not observe that he took any. Judging from the number of specimens found at present, *A. nubeculosus* is not rare in the Dessau district, although perhaps not exactly common. It threatens to disappear from certain parts, with the birch tree, which is becoming extinct, owing to extensive cutting down and none being planted in their place. The quantity of eggs laid leads me to suppose that the larva has many enemies; the weather must be a greater and even more formidable foe than the army of parasitic flies and ichneumons.

Dessau, Germany.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

PIERIS RAPÆ WITH ANGULAR WINGS.—Enclosed is a specimen of *Pieris rapæ* which I have bred from some larvæ collected in September, 1884. My object for sending it to you is to ask you if it is a usual occurrence to meet with specimens with the wings of the same shape as the one sent? I have never met with one before this.—THOMAS HILL; 15, Russell Street, Willenhall, December 20, 1885. [The specimen is curiously abnormal, the indentations being probably the result of accident to the pupa which produced the example.—J. T. C.].

RESTING HABIT OF VANESSA ATALANTA.—Can any of your readers explain to me why *Vanessa atalanta* is so fond of settling

about wasps' nests when built in trees? I have frequently observed this habit, and have never been able to ascertain the cause. —E. INGLEBY MILLER; North Dulwich, Surrey, Jan., 1886.

LYCÆNA ARGIOLUS IN THE MIDLANDS. — On reading Mr. Harcourt Bath's notes upon *Lycæna argiolus* (Entom. 29), I thought it might be useful to pen a few remarks of its occurrence in the neighbourhood of the Malverns. Up to about the year 1877 I looked upon it as one of our common butterflies; it could be seen flying with *Thecla rubi*, both of which, the last few years, have become very scarce in all our woods and copses. The best locality in this neighbourhood is the Holly Bush Hill, about five miles on the Malvern range, where the holly trees grow most luxuriantly. I have taken *L. argiolus* as early as the 17th of April, in good condition till the 7th of May, and again in August, but have never then seen it plentiful. I have observed it flitting over the bramble blossoms, and have beaten the larvæ of it from holly and ivy in October, which larvæ have turned to pupæ about the beginning of November, and have emerged in the following April. There are two broods in our district; the April specimens are larger and brighter than those taken in August. —W. EDWARDS; Great Malvern, January, 1886.

LYCÆNA ARGIOLUS IN THE MIDLANDS. — In answer to the editorial query (Entom. 33), I may say that mountain ash flowers early in the summer with us. On reference to my diary I find that the earliest date on which I have known it to flower in Sutton Park (the result of several years' observations) is May 5th, and its fruits commence to ripen in July, so that it is quite unlikely that it should be able to support a second brood of the butterfly. On the other hand, bramble comes into flower much later, June 21st being the earliest date recorded in my diary. It remains in full blossom throughout July, August, and the major part of September, and occasional flowers may be noticed even as late as November (26th) provided the weather be mild. The blackberry blossom could thus very well supply the requisite food for a second brood of *L. argiolus*, should there happen to be one. In the same article, p. 31, line 7, "Harwich" should read "Warwick," and p. 31, line 20, "Wood" should read "brood." —W. HARCOURT BATH; Sutton Coldfield, near Birmingham, February 15, 1886.

LYCÆNA ARGIOLUS.—I am at a loss to understand how the idea originated that the larva of the second brood of this species feeds on the *blossoms* of the ivy; it is quite possible that the *full-fed* larva may have been found feeding on the blossom or beaten from the ivy when in bloom, but on what did the young larvæ feed, as every one knows that the second brood of *L. argiolus* is over long before the time that the ivy blossoms? My belief is that it feeds on the *leaves* of either of these trees in the localities where it occurs. In one part of Epping Forest I have seen this species out in abundance before the holly has blossomed, although I am well aware that it frequents the blossom, no doubt the same as other butterflies frequent other flowers, for the purpose of feeding on the honey they contain. That it feeds on the young leaves of the holly I have had ocular demonstration, as some few years since I obtained some ova of this species, which I gave to my friend Mr. Wellman, who fed them up and got them into pupæ, but they did not for some cause or other emerge into the perfect state. We gave some of the larvæ to the late Edward Newman, and he published a full description of the same and the manner of feeding. Not having the volume of the 'Entomologist' by me, I cannot give the date, but it was subsequent to 'British Butterflies' being published. Do away with the "blossom theory," and you have no difficulty in accounting for the two broods of *L. argiolus*, although I am inclined to think that the so-called second brood is only a partial one, *i. e.*, the descendants of the very early emerged specimens. I have on several occasions seen numerous specimens of the second brood in the part of Epping Forest referred to, and in other places, but never in anything like the numbers of the spring specimens. The earliest date I have seen it on the wing was one year on the 12th April, when I took four specimens, and ten days afterwards the species was out in abundance, and in the finest condition. In conclusion, I will merely add that I do not think any entomologist has ever seen *L. argiolus* on the wing when the ivy was in bloom in October or November.—C. J. BIGGS; 3, Stanley Terrace, West Ham Park, E., February 2, 1886.

LYCÆNA ARGIOLUS IN THE MIDLANDS.—I am afraid Mr. W. Harcourt Bath's knowledge of the entomology of the Midlands cannot be very extensive, at all events so far as *L. argiolus* is

concerned (Entom. 29). I can answer for its occurrence in three distinct localities, two in the immediate neighbourhood of Burton-on-Trent, and one farther off, but still in this county of Stafford. It occurs among hollies at the edge of Mace Woods, near Whitmore Station, between Stafford and Crewe, where the Rev. T. W. Daltry has repeatedly taken it. And in our own local list, published in last year's 'Entomologist' (Entom. xviii. 180), it is recorded as "scarce round Repton (W. G.), abundant in Needwood Forest." I have myself taken it in plenty, in a wood called "Parson's Brake," about seven miles from Burton, during May, and have noticed that it frequently settles on the blossoms of the wild hyacinth, when, of course, it is easily taken. I can corroborate Mr. Bath's statement as to the great majority of the specimens taken being males, though my experience hardly bears out his as to the time that elapses between the appearance of the two sexes. There is not much ivy in the neighbourhood, but I can say nothing as to the occurrence of a second brood of the butterfly, having never visited the locality at that time of the year. But I have not much fear of Needwood Forest being further "cut up and intersected," unless indeed our legislators should succeed in making it "a misdemeanour" to hold more than 100 acres of land uncultivated, in which event English entomology would soon become a thing of the past. My own impression is that *L. argiolus* may be looked for with success in woods throughout the Midlands, wherever the hollies are permitted to attain their full growth; and this I know to be the case, not in one wood only, but in several, throughout the district known as Needwood Forest. I hope, however, that during the coming season the members of our "Entomological Section" may be able to furnish you with fuller particulars. — CHAS. F. THORNEWILL; The Soho, Burton-on-Trent, February 2, 1886.

REMARKABLY SMALL *LYCÆNA ICARUS*.—I caught a remarkably small male specimen of *Lycæna icarus* (*alexis*) on Keston Common on the afternoon of August 29th, 1885. The exact expanse of the anterior wings is eight-tenths of an inch; as compared with a normal size of one and a quarter inch for this species. It is smaller than any *Lycæna minima* (*alsus*) which I possess.—ERNEST E. JOY; 15, Brownswood Park, N. February 15, 1886.

APPEARANCE OF *ACHERONTIA ATROPOS*.—Can any lepidopterist who has been in the practice of breeding *Acherontia atropos* inform me if the late pupæ which have not emerged in the autumn are likely to do so the following spring or summer, and which I believe to be the case in a state of nature; and also at what time of year are the eggs deposited? From observations taken of a caterpillar obtained in the month of August of last season it appears, on burying some inches below the surface, to form a large hollow cavity by opening or cementing the earth over and around it; in this it changes to the pupa state. By this means it evidently obtains a more equable temperature and amount of moisture. May not the cause of so many pupæ found not coming to maturity be from the fact of having been disturbed from their natural position? The pupa appears excessively sensitive, the one I had persistently objecting to being fully covered with earth on my having to move it for transit, and it died in November last. Both the larvæ and pupæ were somewhat abundant in parts of Somersetshire, Gloucestershire, and Dorsetshire last season.—T. B. JEFFERYS; Clevedon, Feb. 6th.

SPHINX CONVULVULI IN NORTH WALES.—Although *Sphinx convolvuli* appears to have been observed in so many places during last season I do not see any record of its occurrence in Wales. On the 12th of September I received three specimens from Llanfairfechan, Carnarvonshire, one of them still alive. Though I have known the place for some years, I never knew it to occur there before.—J. A. JENKINSON; 63, Bury New Road, Manchester, February 10, 1886.

SPHINX PINASTRI IN SCOTLAND.—The occurrence of *S. pinastri* in the Eastern Counties, reported by Mr. Cooper (Entom. 14), reminds me that while collecting during September, 1860, near Achnaeroish, in the Isle of Mull, West Scotland, my attention was drawn to a full-fed larva of a *Sphinx*, which was, I find from a note taken at the time, green, with one brown stripe and two of pale yellow, spiracles orange and black. This larva was crawling down the trunk of a Scotch fir tree, and, after turning to a healthy pupa, the perfect *Sphinx pinastri* emerged on the 24th of the following July. The specimen still remains in my cabinet. In September, 1861, I found in the same wood a second larva, about half grown, but did not succeed in rearing it, as it died

within a week. I feel sure it would repay any entomologist to work the Island of Mull, for, during the time I was there, I captured many interesting species.—W. EDWARDS; Great Malvern, January, 1886.

PHLOGOPHORA METICULOSA AT CHRISTMAS.—It may be of interest to your readers to hear that I found a very perfect specimen of *Phlogophora meticulosa* on the north side of an oak tree at Putney, on December 26th last year. Could it have been hybernating, as I believe that *P. meticulosa* is rarely found after October? It was apparently hiding in a crevice, and seemed very sleepy.—C. B. H. HUNT; Draycott Lodge, Fulham, February 4, 1886.

ASTHENA BLOMERI.—This species occurs in our woods sparingly, some seasons more plentifully than others. I find, on referring to my note-book, that in the year 1876, on the 27th May, I beat from hazel fourteen specimens, quite fresh, and took the species up till the 10th of June. Of late years it seems to have become more scarce, for I have seldom taken more than five or six in a year.—W. EDWARDS; Malvern, January, 1886.

GEOMETRA PAPILIONARIA AT HIGHGATE.—I took a specimen of this splendid insect inside a gas-lamp here on the 3rd August, 1885. It was in very fair condition, and measured exactly two inches across the spread wings. I should be glad to hear if this insect has been previously observed in this neighbourhood.—A. E. TONGE; Rutland Villa, Highgate, London, N., Feb. 4, 1886

FAUNA OF MIDDLESEX.—I have this year been engaged in compiling a list of the fauna and flora of Bedford Park, Chiswick. The results, though as yet small compared to the probable total, are sufficient to prove that there is still enough insect and other life within the metropolitan district to make collecting both profitable and interesting. The results are briefly these:—Of Lepidoptera I have records of 11 Rhopalocera, including *Euchloë cardamines*, *Gonopteryx rhamni*, *Colias edusa*, *Vanessa cardui*, *V. atalanta*, and *Polyommatus phleas*. The Sphinges are *Sphinx ligustri*, *Smerinthus populi*, *S. tiliæ*, and *S. ocellatus*. The Bombyces are *Euchelia jacobææ* (it is remarkable that the more usual food-plant, *Senecio jacobææ*, is not included in the flora, but *S. vulgaris* occurs), *Hepialus humuli* (very abundant), *Zeuzera pyrina* (*æsculi*), *Leucoma salicis*, *Dicranura vinula*, *Thyatira dera*,
 ENTOM.—MARCH, 1886.

and 7 others. The Noctuæ at present only number 20, including *Acronycta aceris* (larvæ), *A. megacephala*, *A. psi*, *Mamestra persicariæ*, *Noctua plecta*, *Triphæna comes* (orbona), *Plusia chrysitis*, and *Catocala nupta*. There are 16 Geometræ, including *Uropteryx sambucaria*, *Hemerophila abruptaria*, *Amphydasis betularia*, *Crocallis elinguaris*, *Hemithea strigata* (thymiaria), *Hypsipetes sordidata* (elutata) (variety), *Cidaria testata*, and *Eubolia cervinaria*. The smaller moths have not been worked, and at present only *Ebulea sambucalis*, *Acipitilia pentadactyla*, and *Hyponomeuta padellus* are on record. The capture, and consequent recording, of many of the above, is due to the industry of Miss E. Sharpe, F. G. Fenn, J. Gray, and C. Rowland. In nearly every case I have examined the specimens. The Coleoptera number 35, and include *Clivina fossor*, *Cercyon flavipes*, *Dromius melanocephalus*, *Pterostichus strenuus*, *Quedius fulgidus*, *Acidota cruentata* (one only), *Lathrobium fulvipenne*, *Hister unicolor*, *Agriotes obscurus*, *Coccinella variabilis* (var. black, with large yellowish red spots, and var. yellowish, unicolorous, and also the form called *dispar*), *Telephorus lividus*, *Crepidodera aurata*, and *Chrysomela polita*. There are 12 Hemiptera, including *Calocoris bipunctatus* (which is common), *Acanthosoma hæmorrhoidale* (one specimen), *Velia currens*, *Notonecta glauca*, and *Pemphigus bursarius*. The Hymenoptera have for the most part been already recorded (Entom. xviii. 247); but *Lasius flavus*, *L. niger*, *Myrmica ruginodis*, and *Cynips kollari* may be added. The other orders have, owing to the difficulty of naming the specimens, been almost entirely neglected; and I have notes only of some common and well-known forms, e. g., *Chrysopa perla*, *Acheta domestica*, *Lucilia cæsar*, and *Sciara tilicola*.—T. D. A. COCKERELL; Bedford Park, W., December, 1885.

LEPIDOPTERA AT LIGHT, &c., AT WOODFORD, IN 1885.—The following species, taken by my brother and myself at 3 Primrose Terrace, Woodford (from which we have recently removed), may be interesting as showing the number of species obtained in a single season in such a limited area, not more than 8 yards by 50, within 7 miles of the centre of London. Of those marked with an asterisk, single specimens only were taken. *At light*.—*Smerinthus ocellatus*, *S. populi*, *Nola cucullatella*, *Calligenia miniata*,* *Lithosia lurideola* (complanula), *Arctia caia*, *Spilosoma lubricipeda*, *S. menthastri*, *Porthesia similis* (auriflua), *Leucoma*

salicis, *Odonestis potatoria*, *Drepana falcatoria*, *Cilix glaucata* (spinula), *Dicranura vinula*, *Pterostoma palpina*, *Lophopteryx camelina*, *Notodonta dictæa*, *Phalera bucephala*, *Acronycta psi*, *Leucania lithargyria*, *L. comma*, *L. impura*, *L. pallens*, *Tapinostola fulva*, *Gortyna ochracea* (flavago), *Hydrœcia nictitans*, *H. micacea*, *Axylia putris*, *Xylophasia lithoxylea*, *X. monoglypha* (polyodon), *Dipterygia scabriuscula* (pinastri), *Neuronia popularis*, *Charæas graminis*,* *Luperina testacea*, *Mamestra sordida*, *M. brassicæ*, *M. persicariæ*, *Apamea basilinea*, *A. gemina*, *A. ophiogramma*, *A. didyma*, *Miana strigilis*, *M. fasciuncula*, *M. arcuosa*, *Grammesia trigrammica* (trilinea), *Caradrina morpheus*, *C. alsines*, *C. quadripunctata* (cubicularis), *Rusina tenebrosa*,* *Agrotis segetum*, *A. exclamationis*, *Noctua augur*, *N. plecta*, *N. c-nigrum*, *N. triangulum*,* *N. festiva*, *N. rubi*, *N. xanthographa*, *Triphæna ianthina*,* *T. comes* (orbona), *T. pronuba*, *Amphipyra tragopogonis*, *Mania typica*, *Pachnobia rubricosa*, *Tæniocampa gothica*, *T. incerta* (instabilis), *T. stabilis*, *Orthosia upsilon*, *Anhocelis lunosa*, *Tethea subtusa*,* *Calymnia trapezina*, *Dianthœcia capsicola*, *D. cucubali*,* *Phlogophora meticulosa*, *Hadena trifolii* (chenopodii), *H. oleracea*, *H. pisi*, *H. thalassina*, *Habrostola triplasia*, *Plusia chrysitis*, *P. iota*,* *P. gamma*, *Zanclognatha grisealis*, *Z. tarsipennalis*, *Hypena rostralis*, *Uropteryx sambucaria*, *Rumia luteolata* (cratægata), *Metrocampa margaritaria*, *Pericallia syringaria*,* *Selenia bilunaria* (illunaria), *Odontopera bidentata*, *Crocallis elinguaris*, *Eugonia alniaria* (tiliaria), *E. fuscantaria*,* *Hemerophila abruptaria*, *Boarmia gemmaria* (rhomboidaria), *Pseudoterpna pruinata* (cytisaria), *Geometra papilionaria*,* *Phorodesma pustulata* (bajularia), *Iodis lactearia*, *Hemithea strigata* (thymiaria), *Zonosoma punctaria*,* *Acidalia dilutaria* (interjectaria), *A. virgularia*, *A. imitaria*, *A. aver-sata*, *Timandra amataria*, *Cabera pusaria*, *C. exanthemata*, *Halia vauaria* (wavaria), *Strenia clathrata*,* *Abraxas grossulariata*, *Ligdia adustata*,* *Lomaspilis marginata*, *Emmelesia decolorata*,* *Eupithecia oblongata* (centaureata), *E. isogrammaria*, *E. pimpi-nellata*, *E. nanata*, *E. subnotata*, *E. vulgata*, *E. assimilata*, *E. sobrinata*, *E. rectangulata*, *Hypsipetes sordidata* (elutata), *Melanthia ocellata*, *Melanippe rivata*, *M. sociata* (subtristata), *M. fluctuata*, *Coremia designata* (propugnata), *C. ferrugata*, *C. unidentaria*, *Camptogramma bilineata*, *C. fluviata*,* *Phibalapteryx vitalbata*,* *Triphosa dubitata*, *Cidaria truncata* (russata), *C.*

testata, *C. associata* (dotata), *Pelurga comitata*, *Eubolia plumbaria*, *Senta maritima** (ulvæ), and *Chesias rufata** (obliquaria); in all 142 species, 80 of which were taken by an adaptation of the American moth-trap, described by Knaggs. *In daytime*.—Fifteen Diurni, including *Euchloë cardamines*, *Gonopteryx rhamni*, *Vanessa io*, *V. atalanta*, *V. cardui*, and *Pararge megæra*, and *Orgyia antiqua* on the wing. Also several species, including *Biston hirtaria* and *Acidalia dimidiata* (scutulata) at rest on fences. *Nothing at dusk*.—In addition to many of those taken at light, and which need not be repeated: *Sphinx convolvuli*, *Hepialus humuli*, *H. lupulinus*, *Agrotis nigricans*, *Hypena proboscidalis*, *Eugonia quercinaria* (angularia), and *Larentia didymata*. *At sugar*.—Twenty-seven species, all previously mentioned, except *Acronycta megacephala* and *Mania maura*. Among numerous other larvæ was found one of *Sphinx ligustri*, making a total in all of 170 species of Lepidoptera.—E. B. BISHOP; Charlton Villa, Princes Road, Buckhurst Hill, Essex, November 16, 1885.

PERFORATED OVA OF LEPIDOPTERA.—I have been unable to find the article mentioned by Prof. Jeffery Bell (*Entom.* 18) on the Micropyle, and shall be much obliged if he will let me know more particulars as to where it may be found.—C. B. HOLMAN HUNT; Draycott Lodge, Fulham, February 4, 1886.

FORCING PUPÆ.—The following may be of interest to some of your readers. Being determined to find out if there really was any good in forcing, and having a tortoise stove in my greenhouse, I adopted the following plan:—On the top of the stove I placed four bricks, two on each side above each other; on these a square pot seed-pan, the finish being a good-sized fish-bait tin. An aperture was left between the bricks, so as to let the hot air circulate freely all round. In the tin was placed moss, which was kept moistened with warm water, sprinkled over the pupæ with the hand every other day. On November 17th the following pupæ were placed in the tin, and the temperature kept at about 90 to 100 degrees:—Six *Acherontia atropos*, six *Chærocampa elpenor*, eight *C. porcellus*, twelve *Deilephila euphorbiæ*, four *Smerinthus ocellatus*, and three *Sphinx ligustri*. The result is that now (20th of January) the following imagines are out:—Six *C. elpenor*, nine *D. euphorbiæ*, two *C. porcellus*, and one *A. atropos*. The rest of the *A. atropos* died just as they were about

to change, no doubt through some mismanagement. The other pupæ are healthy and will soon change. On December 21st a few more were introduced, among others *Macroglossa fuciformis*, *Cucullia scrophulariæ* and *C. verbasci*; during this short time three *M. fuciformis* and three *C. verbasci* have developed. I have also kept a lot of other pupæ in the same greenhouse, where the temperature ranges from 55° in the day to 45° at night; these have been in the greenhouse about the same time as the others. Two *Saturnia pavonia* (*carpini*), and one *Pygæra curtula* are out of this lot.—H. H. MERRIMAN; Blundellsands, near Liverpool, January, 1886. [We presume that the *Deilephila euphorbiæ* mentioned are exotic pupæ, as this species does not appear to have been taken in Britain for some years.—ED.]

PSEUDOPSIS SULCATUS, Newm.—On the 17th of last October I took an example of this curious insect in an old haystack, but, though I searched carefully, could find no others. *Micropeplus margaritæ*, Duv., and *Cryptophagus umbratus*, Eric, also occurred sparingly, and *Heterothops dissimilis*, Gr., rather commonly.—E. CAPRON; Shiere, Surrey, January, 1886.

EUPLECTUS KUNZEL, Aubé.—On reading Mr. Blatch's paper in the Ent. Mo. Mag. for this month, I at once referred to my Euplecti, and find that six of my examples of *Euplectus signatus* are undoubtedly the rare *kunzei* of which he only knew three British specimens. I had thought them large females of *E. signatus*. They were taken at various times in a sandpit, but all in the same locality.—E. CAPRON; Shiere, February, 1886.

MOTH TRAPS.—In answer to Mr. Hall (Entom. 45), I must admit that the moth-trap he mentions appears to be of little use. Last summer I tried it on several different nights, and at various parts of our garden, but was unable to catch even a gnat in it. I am not quite certain whether the figure in the 'Field Naturalists' Hand-book' is intended to be a ground plan or a vertical section. Though I used the trap in both positions, I was unable to get any result at all. I made the trap myself, and perhaps it was too roughly constructed to take the fancy of the moths.—C. B. H. HUNT; Draycott Lodge, Fulham, Feb. 4, 1886. [See remarks by Mr. E. B. Bishop (Entom. 66).—ED.]

ERRATUM.—Page 38, for "Dychwood Forest" read "Wychwood Forest."

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*February 3rd.* Robert M'Lachlan, F.R.S., President, in the chair.

The President nominated Mr. F. Du Cane Godman, F.R.S., Mr. H. T. Stainton, F.R.S., and Mr. J. Jenner Weir, F.L.S., Vice-Presidents for the ensuing year.

Dr. Livett, Lieutenant Goodrich, and Messrs. Eustace Banks and F. Enock were elected Fellows; and M. Ragonot, of Paris, ex-President of the Entomological Society of France, was elected a Foreign Member of the Society.

Mr. C. O. Waterhouse exhibited some scales of *Coccidæ* (*Eriopeltis*), some of which were found by Mr. F. Moore on blades of grass at Ilfracombe; and others were found by Mr. Waterhouse on blades of grass in the Warren at Folkestone. Mr. E. A. Fitch remarked that *Eriopeltis festuæ* had been recorded as British at a meeting of the Society held about thirty years ago.

Mr. Douglas sent for exhibition leaves of *Euonymus japonicus*, received from M. Lichtenstein, infested by *Chionaspis euonymi*, which occurred in great numbers at Montpellier and Nismes, and always destroyed the shrubs attacked by it.

The President exhibited specimens of *Tettix australis* (Walker), received from Mr. Olliff, of the Sydney Museum, who had captured them at the River Nepean, New South Wales. Mr. Olliff stated that the insect was decidedly subaquatic; he had found the insects not only on the surface of pools of water, but also eight or ten inches below the surface on the stems of water plants.

Mr. W. F. Kirby exhibited, on behalf of Mr. Ralfe, several specimens of *Lycæna corydon* of a very extraordinary character; and Mr. Weir and others made remarks on them.

The Rev. W. W. Fowler exhibited a specimen of the almost unique beetle, *Harpalus calecatus*, taken by himself at Bridlington, Yorkshire; also a specimen of *Apion Lemoroi* (Brisout), a new French *Apion* taken on the coasts of Normandy and Brittany. He also exhibited several species of British *Helophori*, and read notes on their synonymy.

Mr. H. Goss read an analysis of M. Brongniart's recent work on 'Les Insectes Fossiles des Terrains Primaires' (Rouen, 1885),

and expounded that author's views on the classification of insects from geological data.

The Rev. W. W. Fowler read notes on "A small collection of *Languriidæ*, with descriptions of two new species."

Dr. Baly communicated a paper entitled, "Descriptions of new genera and species of *Galerucidæ*."

Mr. J. Edwards communicated the first part of a synopsis of British Homoptera (*Cicadina*).—H. Goss, Hon. Secretary.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*February 4th*, 1886. R. Adkin, F.E.S., President, in the chair. Mr. Billups exhibited *Agapanthia lineaticollis*, Don., from Lincoln; also *Callidium variable*, Linn., and *Strangalia 4-fasciata*, Linn., from Chobham. Mr. Rose, a variety of *Epinephela hyperanthus*, L., in which the ring-spots of the upper side, instead of being of the ordinary form, were identical with those usually confined to the under sides. Mr. Wellman, a fine series of *Oporabia filigrammaria*, H.-S. Mr. J. T. Williams, a very beautiful banded variety of *Nyssia hispidaria*, Fb. Mr. Joy, subdiaphanous varieties of *Vanessa io*, L., and *V. urticæ*, L. Mr. South, a series of *Emmelesia albulata*, Schiff., from Switzerland, and the following counties and districts of Great Britain: Kent, N. Devon, Dumbarton, Rannoch, and the Shetland Isles; and contributed some interesting notes on the different forms of this species. It was resolved that the Council be requested to organise a scheme for the collection of material upon which to found a complete list of the fauna and flora of certain of the southern counties.—H. W. BARKER.

REVIEW.

Larvæ of British Butterflies and Moths. By the late WILLIAM BUCKLER. Vol. I., Butterflies. Ray Society, 1885.

THIS volume is issued by the Ray Society to the subscribers for the forty-second year, 1885.

During the long period of the Ray Society's existence the works issued by them, though doubtless of unequal merit, have been in all cases important contributions to science, and in most instances would have been unpublished had the society not existed.

The volume under consideration is the first that the Society

has issued on that most fascinating order of insects the Lepidoptera, and is the "first instalment of the entomological remains of the late William Buckler." The late Mr. Buckler was well known to all students of the British Lepidoptera as a most painstaking and correct delineator of the larvæ of that order of insects, and it was with great satisfaction they hailed the announcement that the Ray Society had purchased his drawings, and that the labour of "half a lifetime" would not be lost.

The letterpress extends to about two hundred pages, and is the joint production of the late Mr. Buckler and the Rev. John Hellins, the latter of whom, from the year 1858 to June, 1884, had been in constant correspondence with the former. The whole has been most ably edited by Mr. H. T. Stainton, F.R.S.

The descriptions of the larvæ, and the accounts of the difficulties met with in rearing them, have that charm of truthfulness which render them so welcome to the student of Nature.

The plates, seventeen in number, contain each from sixteen to eighteen figures. Mr. Buckler appears to have excelled much more in drawing the larvæ than the pupæ; the latter are in most instances little more than outlines; the drawing of the pupa of *Apatura iris*, Plate VII., is very inferior to that of the larvæ of the same plate.

Amongst some of the best may be pointed out *Aporia cratægi*, Plate II.; *Vanessa antiopa*, Plate VIII.; and *Grapta c-album*, Plate IX. In these cases the figures are excellent. The representations of four larvæ of *Pyrameis cardui*, Plate VIII., no doubt faithfully rendered, show how large is the range of variation in the larvæ of that species.

The plates are by no means of equal merit, and there are evidences that the earlier drawings of Mr. Buckler were much surpassed by his later productions.

The execution of the plates by Messrs. West, Newman & Co. leaves nothing to be desired.

It may be well to point out that the Ray Society has incurred heavy expenses in the purchase of the drawings, and in the getting up of the work, and that the issue of the subsequent volumes necessary to complete it in a comparatively short time, and the size of each volume, will depend upon the support received, by an increase in the number of subscribers.

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[No. 275.]

CRAMBUS CONTAMINELLUS IN THE ZELLER COLLECTION.

By J. W. TUTT.

IN my notice on a probable new species of *Crambus* (Entom. 29) I expressed the opinion that the two species which obtain in Sussex and Lancashire, and known as *C. contaminellus*, and the Deal species (which probably is the same as the Blackheath species) for which I proposed the name *cantiellus*, were possibly mixed in the Continental collections; I therefore went through Zeller's collection of the Crambidae at the Natural History branch of the British Museum at South Kensington, and examined carefully his series of *Crambus contaminellus*. I found, indeed, a good mixture, and made the following notes on the insects comprised in the series, which, I think, will be interesting.

1. Six specimens of the Lancashire and Sussex *Crambus contaminellus*, labelled *contaminellus*, H., and on the label reference is made to H. fig. 59 and Tr. ix. 1, 124. On referring to Hübner, fig. 59, I found a *Crambus* figured with a dot on the central nervure of the wing, and a broken line near the hind margin. This most certainly would not do for the Deal insect, as in all fine specimens the first line (crossing the centre of the wing) is distinguishable throughout, and the second line, although finely marked, is not broken, and this I consider a very marked characteristic of the Deal insect, for, while the markings of *C. contaminellus* may be looked upon as two broken lines made up of a series of dashes, they are never broken up in the Deal

Crambus cantiellus; neither would the figure do for the ordinary Lancashire and Sussex form, but I find there is a form of this species which has the central shade reduced to a minimum, and the lines almost obsolete, and Zeller undoubtedly considered that Hübner had figured this form, for his insects of this type include two specimens of it, the central shade being nearly lost in the ground colour, the first line reduced to a dash, and the second line much broken; hence, I presume, his reference to Hübner's figure. Except for this form, Hübner's figure would not agree with either of the species, and I had an impression at first that it was meant for the pale var. of *Crambus inquinatellus*, which is the only *Crambus* I know where there is a central dot followed by a broken line.

It may be well to remark here that Hübner's figures are at the best very unreliable, and, in obscure species, would often do as well for several species other than those they are supposed to represent.

2. In Zeller's series there are also three specimens of the Deal species (one male and two females), labelled Astrabad, Led. These are the grey form which more nearly approach the true *Crambus contaminellus* than any other.

3. Three specimens (one male and two females) labelled *contaminellus*, Sarepta, Christoph. These are of a pale whitish grey colour, without markings, even more robust than our *C. contaminellus*, and I believe quite distinguished from either of our species.

4. Twelve specimens labelled with localities and dates. These are the Deal species, eleven being males and one female; the males are variable in colour, and include two dark vars.

There is no doubt that it is Hübner's imperfect figure that has been the means of causing so much uncertainty about *Crambus contaminellus*, and unless it be referred to the obscure form of our Lancashire and Sussex insect as before noticed, is so poor that it would represent neither, or, in other words, would represent equally well (or badly) either of our species. Had it not been that I found a form of our *Crambus contaminellus* somewhat approaching his figure, I should have considered his figure to have represented the variety of *C. inquinatellus* before mentioned.

Those who have had Herrich-Schäffer's work have been more

happily circumstanced. He gives a good figure of *Crambus contaminellus*, as we know it, and it agrees exactly with the series in the Doubleday collection of our Sussex and Lancashire form.

There is no doubt that the typical *Crambus contaminellus* of H.-S. was the Lancashire and Sussex form, and, as far as can be fairly made out from Hübner, that his was the same species. To make the matter more complex, both are comparatively coast species, *C. contaminellus* apparently always so, but *C. cantiellus*, besides being a coast species, inhabits sometimes inland districts, as the Blackheath district, and also districts of Central Europe, probably, however, old coast lines in almost every case, so that the locality of the insect can do little towards the identity of its species.

I might add, that in the figure of the insect (Entom. 53), although the second doubly-angulated line is correct as to direction, it is more zigzag in shape; and when I referred to *C. geniculeus* (Entom. 56) I may have been misleading, as it was again only to general shape and direction that I intended to refer, as the line itself is continuously zigzag throughout, and much finer than in that species.

Rayleigh Villa, Westcombe Park, Blackheath, S.E., March 8, 1886.

NOTES ON THE CRAMBUS FROM DEAL.

By W. H. TUGWELL.

THE two notices on this subject in the last two numbers of the 'Entomologist,' by my friend Mr. J. W. Tutt, have interested me greatly, as examples had been in my cabinet since 1877 as doubtful *Crambus contaminellus*. A short account of them may possibly interest others.

On my first visit to Deal, August, 1877, I took five females of this *Crambus*, and I could not satisfactorily determine them, so sent them on to Mr. C. G. Barrett, one of our best authorities on British Micro-Lepidoptera, and about them he wrote me, Oct. 31st, 1877:—"I believe that your *Crambus* is the female *contaminellus*, though I never saw one before. Mine seem to be all males. The Blackheath *contaminellus*, which I expect you have, is rather redder and less distinctly marked than coast specimens. If

your other specimens are males, and have the apex produced like this, they will be distinct from *contaminellus*; but, if they are rounded, you will find the name I give them correct. Please examine and let me know the result, for this creature is of a very curious form." At that time I had only females, nothing more could then be done; and, although I afterwards, in 1878, 1879, and 1880, secured odd specimens of both sexes, I failed to reopen the subject. The six specimens in my cabinet, ranged after the Lancashire (Preston) *Crambus contaminellus*, always impressed me as differing greatly from that insect; and when Mr. Tutt zealously worked up a fine series at Deal, one could hardly fail to see that they must be distinct. For all that I fear my friend has been a little premature in elevating the Deal insect in his new species, *cantiellus*, much as I should like to see my county, Kent, honoured by the name on our list.

At the February meeting of the South London Entomological Society I exhibited the Deal and Preston insects; when, directly Mr. W. West, of Greenwich, saw the Preston *C. contaminellus*, he at once said that they were totally different to his Blackheath *Crambus contaminellus*, and promised to send them to me for comparison, which he did, *viz.*, two males and two females, taken by himself on Blackheath some ten years since. I fear the insect is lost there now, for it appears no longer to occur. It was at once clear that the Blackheath insect was identical with the Deal species. This was a great surprise to me. I therefore visited Mr. Stainton, who is ever ready and desirous of helping entomologists; so that I did not hesitate to seek his aid. That appeared to me the best means of finding out the source of his information for writing the 'Manual' description, and to gather from his rich collection and library what was really known of the species on the Continent. I found, as expected, that Mr. Stainton had written his description of *Crambus contaminellus* from Blackheath specimens, of which he had two males, in his collection. Apparently, like Mr. C. G. Barrett, he had not any female examples: hence the reason why the peculiar form of that sex was not described in the 'Manual' or known to Mr. Barrett.

On seeking for the continental knowledge of the species, Hübner's plates, published 1801, were first inspected; here we found that he had the Deal form, characteristically shown,

viz., in the unicolorous wing, *i.e.*, no dark streak or shading, as in the Preston insect, and the first line showing only as a dot or spot on the central nervure of anterior wing, which is a frequent character in the Deal insect. There could be no doubt that our Blackheath and Deal insect was Hübner's *C. contaminellus*. We then turned to Herrich-Schäffer's magnificent work, published about 1854 or 1855. There the Preston *C. contaminellus* was clearly and well shown, its dark streak of blackish-brown shading running from the base, and filling up the space between the median and submedian nervures to what represents the first line (but which is a shading rather than a line), and which dark streak continues less directly to the second shade-line.

It is thus very evident that both forms are known to continental authors as *Crambus contaminellus*. Certainly to me they look two distinct species, but whether that is so, or that they are only two widely-divergent forms of one species, further investigation and a knowledge of the respective life-histories only can prove. Of course, if two species, Hübner's figure, as representing the Blackheath and Deal form, must stand by priority as *Crambus contaminellus*, and a new name be found for the Preston form.

With Mr. Stainton's continental specimens he had one from Zeller; this was not so strongly marked as the Preston insect, but more nearly approached that form than the Blackheath, although it wanted the characteristic dark shade between the nervures.

The figure given (Entom. 53) of these is not good or characteristic of the Blackheath insect; the first line is much too oblique, and it is not bifurcate as there shown. I therefore append sketches to better explain my meaning.

No. 1.—Anterior wing of male Blackheath *contaminellus*, male, picked, as showing the lines in their most distinct form. Colour, unicolorous warm brown.



No. 2.—Anterior wing of ditto, female, picked, as showing narrow wing, produced tip, and broken first line. Colour, unicolorous grey.



No. 3.—Anterior wing of Preston insect, showing streak. Colour, varied shades of warm brown and black-brown.



All life-size.

There is one very strong character in the Preston insect, to which I called Mr. Stainton's attention, and he said at once that

it was very important. The hind wing is generally paler, and has a band or shade of dark grey running parallel to hind and inner margins, which is not usual in the Crambidæ.

I shall feel particularly indebted for specimens of *Crambus contaminellus* from any other British station, and would do all I can in return for the favour.

6, Lewisham Road, Greenwich, March 8, 1886.

TINEÆ TAKEN NEAR CAMBRIDGE.

BY WILLIAM FARREN.

THE following is a list of the Tineæ taken by my son, A. W. Farren, and myself around Cambridge, unless otherwise specially mentioned, during the past season. Our range of locality near home is really very limited, though not to that, but to the continued strong easterly winds which prevailed all summer, must be attributed the absence of several rarities we ought to have captured.

Diurnea fagella, at lamps; dark fuscous gray varieties.

Epigraphia steinkellneriana, scarce; bred and beaten from hawthorn.

Fumea intermediella, two in Wicken Fen,—one at sunset and one at sunrise; this species is new to the fen.

Xysmatodoma melanella, one on trunk of willow, Ditton Fields.

Scardia parasitella, bred from apple bark. *S. granella*, beaten from thatch. *S. cloacella*, beaten from thatch, and bred from decayed wood and bark.

Blabophanes rusticella, bred in abundance from birds' nests.

Tinea tapetzella, in its usual haunts—outhouses. *T. misella*, a good series, beaten from and flying about thatch. *T. pellionella*, at home. *T. fuscipunctella*, at "Catch-'em-Hall," as we have christened our three-roomed cottage in the fen. *T. pallescentella*, at home, most plentiful at Christmas time. *T. lappella*, bred plentifully from birds' nests; light ochreous and dark fuscous varieties.

Tineola biselliella, at home; rather too much so.

Lampronia rubiella, one in Wicken Fen.

Incurvaria muscicella, abundant, flying in the sunshine along hedge-rows; some nicely marked vars.; one, a female, with a third white spot on the costa, between, and as large as, the two dorsal spots.

Micropteryx calthella, in king-cups (*Caltha palustris*) *M. thunbergella*,

common in Scotch firs. *M. semipurpurella*, scarce, hedgerows alongside plantations. *M. subpurpurella*, scarce, hedgerows alongside plantations.

Nemophora swammerdammella, scarce, beaten from beech, Gog and Magog Hills. *N. metaxella*, a nice set, flying from sundown till dark on sheltered sides of sallow bushes; did not come to light; Wicken.

Adela crasella, on privet blossoms, in the sunshine.

Nematois cupriacellus, one female on the "Breck Sands."

Swammerdamia cæsiella, *S. oxyacanthella*, *S. pyrella*, bred from whitethorn. *S. combinella (apicella)*, beaten from mixed hedge, Gog and Magog Hills.

Hyponomeuta plumbellus, beaten from sloe bushes, Upware. *H. padellus*, bred from whitethorn; scarce this year, though I have known the hedgerows stripped in some seasons by the larvæ. *H. cagnagellus*, beaten from *Euonymus*, Upware.

Anesychia funerella, flies at dusk; one hot night I took five dozen in less than an hour, all males, but I never got so many as a dozen on any other night; seldom came to light; also bred from comfrey (*Symphytum*); I have seen six or eight larvæ on the under side of a comfrey leaf, —some full fed, others only a day or two old. *A. decemguttella*, found sitting on the plants of *Lithospermum* by day; many larvæ in September from same plants.

Plutella cruciferarum, very common; an annoying little moth, but in fine variety; a large ochreous brown var. occurs in the fen. *P. porrectella*, a fine series bred from dame's violet (*Hesperis matronalis*).

Cerostoma vittella, beaten from elm hedge.

Harpietyx xylostella, bred from honeysuckle.

Orthotelia sparganella, at light in the fen.

Phibalocera quercana, bred from hawthorn, &c.

Depressaria flavella, bred from *Lysimachia vulgaris*; also at sugar and light. *D. arenella*, at sugar, and beaten from thatch. *D. propinquella* and *D. subpropinquella*, beaten from thatch. *D. rhodochrella*, one from thatch; I saw this rather common one season about eight years ago in my garden. *D. alstræmeriana*, beaten from thatch. *D. purpurea*, scarce, along hedgerows and from thatch; this used to be very common here twenty-five or thirty years ago, probably is now if I hunt the old places. *D. liturella*, two large, dark, and finely coloured specimens, bred from sallow shoots in fen; probably ascended the sallow bushes to lay up for pupation, although my experience is that the larvæ of the *Depressaria*, like most other larvæ, go down for that purpose. *D. conterminella*, bred from osier and sallow shoots; it seems almost impossible to catch the imago in fine condition; seems to "waste" as soon as it flies. *D. angelicella*, a large series bred from *Angelica*; some nice vars., sometimes eight or ten larvæ in one head. *D. ocellana*, bred from sallow shoots, finely marked, also at sugar especially, and thatch. *D. yeatiana*, bred from rolled-up leaves of

Peucedanum palustre, and many from old sedge stacks. *D. applana*, rather too common in thatch; but one very fine, almost black, among other vars. *D. ciliella*, bred from *Peucedanum palustre*, and beaten from old sedge stacks, &c.; in great variety, from light sandy red through shades to blackish brown, some beautifully mottled. *D. albipunctella*, from thatch; scarce. *D. weirella*, one only from thatch. *D. chærophylli*, bred from umbels of *Charophyllum temulum*. *D. heracleana*, bred from *Heracleum sphondylium*, also abundant in thatch.

Gelechia vilella, one only, beaten from thatch. *G. pinguinella*, one at light in the fen. *G. muscosella*, two bred from willow. *G. ericetella*, on the "Breck Sands." *G. divisella*, four or five in fine condition at light. *G. sororeulella*, one in the fen.

Brachmia lathyrælla, bred freely from *Lathyrus palustris*, also at light and mothing in the evening; I found a patch of *Vicia cracca*, with what I expect is the larvæ of this species; I could see no difference, and they fed exactly the same as those on *Lathyrus*; I am keeping them separate.

Bryotropha terrella, common on the fen banks. *B. desertella*, rare on the fen banks. *B. politella*, one only, rare on the fen banks. *B. basaltinella*, beaten from thatch; a skittish little thing to catch; is not likely to die out for want of self-preservation.

Lita acuminatella, two females and a male on the fen. *L. fraternella*, a long series bred from shoots of *Cerastium triviale*; larvæ feeding from March 24th to beginning of June. *L. marmorea*, rare on "Breck Sands."

Teleia notatella, bred from larvæ on willows, &c., beaten from willows, and at light. *T. sequax*, bred from rock-rose (*Helianthemum vulgare*); also taken at "The Gogs" and "Flem Dyke," flying in the sunshine. *T. dodecella*, beaten from Scotch firs; also two or three in the fen, where there is not the ghost of a fir; these are rather larger and paler than those from fir.

Ergatis subdecurtella, I saw the larva of this feeding in the young shoots of the purple loosestrife (*Lythrum purpurea*), but thought them too small to take; and as I was away for a week, about the only hot one we had all summer, I missed them, for not one could I find when I went back. *E. ericinella*, on the borders of the "Breck Sands."

Doryphora palustrella, a solitary, but fine, specimen at light; this, I believe, was the only one taken during the season. *D. oblitella* (*suffusella*), three, as good as bred, at light, and one bred; these were all that were taken. *D. morosa*, larvæ in young shoots of yellow loosestrife (*Lysimachia vulgaris*); are much blacker bred than caught; came rather freely to light one night: when in the net this is most lively, and worse to box than a flea. *D. lutulentella* (verified by Mr. H. T. Stainton), new to the fens; I took four very fine specimens; two others were taken, and I think went to Mr. W. Warren.

Lamprotes atrella, scarce at light; fens.

Anacamptis taniolella, at "Flem Dyke." *A. anthyllidella*, one only in the fen; is rather large, and not so well and strongly marked, but I suppose must be referred to this species.

Tachyptilia populella, freely bred, and in great variety, from shoots of willows.

Ceratophora rufescens, came freely to light just as the day was breaking, some 230 in about an hour; after that flying, and *in copula*, till the sun was well up; larvæ in rolled grass leaves in September, about half fed; never saw this species flying in the evening, nor did it come to light during the dark hours. *C. inornatella*, nothing in the evening till too dark, then for about an hour at light.

Cladodes gerronella, the same remarks apply as in the preceding species.

Parasia metzneriella, bred from old heads of *Centaurea*, and came to light for about two hours after we lit up.

Anarsia spartiella, among broom on the "Breck Sands."

Harpella geoffrella, a beautiful series, beaten from hedgerows in lanes, near Sevenoaks; I shall never forget the first specimen I took of this in 1854, near the same spot; not having seen it before I thought nobody else had, and that it must be new; but I was young then.

Hypercallia citrinalis (*christiella*); I could not resist a run down into Kent to the spot where I took this lovely species half a lifetime ago: after a long and tedious search I found larvæ enough to breed fourteen beauties: but I fancy somebody has been there since I was last, in 1862, for it seems pretty well cleared out.

Ecophora minutella, flying in my breeding and turf shed, at "Catch'em-Hall." *Æ. fulvigitella* (*glavimaculella*), flying over and settling on flower-heads of *Angelica sylvestris*; larvæ in seeds of same. *Æ. unitella*, bred from plum tree bark. *Æ. fuscescens*, flying about the thatch of "Catch'em-Hall," as the sun was setting, and in the rays of the setting sun. *Æ. pseudopretella*, common at home and elsewhere; also bred from rice.

Endrosis fenestrella, everywhere indoors and out.

Butalis grandipennis and *B. senescens*, among broom and furze: "Breck Sands."

Glyphipteryx fusciridella, common in the meadows. *G. thrasonella*, among rushes in the fen. *G. cladiella*, rather scarce last season in the fen. *G. forsterella* (*oculatella*), one only in the fen. *G. fischeriella*, by sweeping, on the fen edges.

Heliozele (*Tinagma*) *sericiella*, flying in the sunshine along the plantation on Trumpington Road. *H. resplendella*, one only; "Flem Dyke."

Argyresthia nitidella, bred and beaten from whitethorn; also the plain creamy var. *A. semitestacella*, *A. spiniella*, *A. albistria*, *A. abdominalis*, and *A. retinella*, beaten from willows. *A. praeocella*, one only, beaten from mixed hedges.

Gracilaria alchimiella (*swederella*), bred and beaten from ash. *G. stigmatella*, beaten from thatch. *G. syringella*, bred from lilac, six or eight larvæ in a leaf. *G. auroguttella*, one in the fen. *G. imperialella*, larvæ on *Symphytum*; very difficult to get at the right age; either too young, or gone.

Ornix anglicella, bred in plenty from whitethorn; the perfect insect in swarms in the hedgerows. *O. avellanella*, beaten from hazel hedge. *O. guttea*, one beaten, near Sevenoaks.

Coleophora fabriciella, rare in the fen; by mothing at twilight, and in the first hour at light. *C. melilotella*, the same remarks apply to this species, which I think is new to the fen. *C. anatipennella*, beaten from willows, and at light; fen; rare. *C. onosmella*, on the "Breck Sands," where the viper's bugloss is plentiful. *C. troglodytella*, on *Eupatorium cannabinum* in the fen; seems rare. *C. lineolea*, very common all round Cambridge on *Ballota nigra*; not so freely on *Stachys sylvestris*. *C. murinipennella*, taken freely at light in the fen, at all hours of the night. *C. cæspititiella*, very abundant near Cambridge; not so common in the fen, in fact rather scarce. *C. laripennella* (*annulatella*), two, in fine condition, at light in the fen; new to the locality. *C. apicella*, at light in the fen; came only during the first hour or so. *C. argentula*, on seed-heads of yarrow round Cambridge. *C. juncicolella*, by sweeping; "Breck Sands." *C. albitarsella*, common all round Cambridge, also on the fen. *C. nigricella*, in every whitethorn hedge. *C. fuscadinella*, in every elm hedge. *C. gryphipennella*, rather scarce at Cambridge on wild rose. *C. siccifolia*, I found about thirty full-fed larvæ of this at "the backs," in June, a place I have "haunted" all my life and never saw it before; true, I had always looked for it before in July. *C. viminetella*, not at all common on osier and willows. *C. lutipennella*, two beaten from elm at Wicken. *C. badiipennella*, one beaten from elm at Wicken.

Cosmopteryx lienigiella, rare, flying about reeds in the fen in the evening; a few came to light directly we lit up; larvæ later on in reed flags. *C. orichalcea*, a good series, one warm evening, by sweeping: larvæ in September, in two or three sorts of grasses. I look upon this species with a sort of fatherly love, as I took two specimens at the back of Stubby Copse, in the New Forest, the same week that Brown took his one in the fen, when it was new to science.

Batrachedra praeangusta, common on the trunks of Lombardy poplars, both at Wicken and Cambridge.

Chauliodes illigerellus, bred from *Angelica*, and caught by mothing in the evening, and at light.

Laverna epilobiella, larvæ common in shoots of *Epilobium*. *L. decorella*, one from thatch, in March. *L. rhamnella*, beaten from buckthorn in the fen. I ought to be able to add *L. phragmitella*, but where it used to be abundant years ago in Burwell Fen, they cut all the herbage,—reed-mace, and all,—every year: and *phragmitella* “is gone for aye,” I fear, from there.

Chrysoclysta aurifrontella, was plentiful in one bit of hedge at Whittlesford, but rare elsewhere.

Elachista luticomella, a few under a sheltered hedge in our lane, Wicken. *E. cinereopunctella*, *E. nigrella*, *E. bedellella*, and *E. obscurella*, were all taken sparsely in and about the fen, but the Elachistidæ were never plentiful all the season, owing I expect to the cold evenings with east winds. *E. cerussella*, flying over the bare spaces in the fens; common. *E. rhynchosporaella*, captured in same way as last, but rare. *E. rufocinerea*, abundant near Cambridge. *E. argentella*, I did not see half a dozen all through the season.

Lithocolletis roboris, bred from oak leaves from Girton. *L. pomifoliella*, bred from hawthorn leaves; the most abundant species here. *L. spinicolella*, bred from sloe leaves. *L. faginella*, bred from beech. *L. viminetorum*, bred from osier from Ditton. *L. quercifoliella*, bred from oak; common. *L. messaniella*, bred from evergreen oak; swarms where it occurs. *L. corylifoliella*, bred from hawthorn; is not very common. *L. viminiella*, from willow. *L. heegeriella*, rare; from oak leaves. *L. cramerella*, common; from oak leaves. *L. schreberella*, bred a nice lot of this handsome—but troublesome to pin—species from elm. *L. tristrigella*, bred from elm. *L. trifasciella*, from honeysuckle; does not seem so common as it used to be.

Phyllocnistis suffusella, bred from “the slimy looking mines” of Lombardy and common poplar leaves, and aspen. *P. saligna*, bred from smooth-leaved osiers.

Cemistoma laburnella, common on laburnums. *C. scitella*, not common on hawthorn.

Opostega saliciella, a single specimen in the fen. *O. auritella*, a nice series of about twenty at twilight and at light, for a short time early.

Bucculatrix cratægi, beaten from hedges. *B. boyerella*, on elm trunks. *B. frangulella*, beaten out of buckthorn on the fen.

A few specimens bred of *Nepticula atricapitella*, *N. ruficapitella*, *N. anomalella*, *N. pygmaella*, *N. pomella*, *N. oxyacanthella*, *N. ignobilella* (I had a good lot of larvæ of this, but nearly all were ichneumoned), *N. gratiosella*, *N. marginicolella*, and *N. aurella*, close the list.

This is, after all, by no means a bad list, considering that we also collected the other divisions of Lepidoptera, and it serves to show what may be done in a single year.

AN AFTERNOON AMONG THE BUTTERFLIES OF
THURSDAY ISLAND.

BY GERVASE F. MATHEW, R.N., F.L.S., F.Z.S., F.R.G.S.

(Concluded from p. 36.)

Ornithoptera priamus, Linn., var. *pronomus*, Gray: three or four of these most magnificent butterflies were seen, and a pair, a male and female, in perfect condition, were captured. I was also fortunate enough to find two chrysalids and two full-grown larvæ, and saw many smaller larvæ, which I did not take, as their food-plant will not keep fresh for more than a couple of days on board ship. The larvæ were feeding upon a kind of *Ipomœa*, which was twining itself among and over the brushwood, some at a considerable height, while others were feeding upon portions of the plant which were trailing on the ground, and I nearly trod upon one of the largest larvæ. The following is a description of a full-grown larva:—Length, two inches and a half; tapering slightly towards each extremity; central segments thickened; comparatively short and obese; smoky black, with a tinge of madder-purple; head black and shining, with a narrow white v-shaped mark on the face; upon the crown of the 2nd segment a crescent-shaped shining black plate, and between this and the head is the nuchal aperture, through which, when the larva is irritated, is emitted a pair of short thick carmine-coloured tentacles; a subdorsal row of finely-pointed spines on each side, the spines rather long, and those on the posterior segments pointing backwards; tips and base of spines black, intermediate portion scarlet, except on 8th segment, where the base of spine is white, and from thence springs a broad oblique white stripe pointing forwards, and terminating at the spiracular region; a row of black spines just below the spiracles; upon 3rd, 4th, and 5th segments an additional spine between the subdorsal and spiracular row; a short black blunt tubercle on 2nd segment upon each side of the face; a short black spine above each leg and claspers, which are shining black. The chrysalis, which is of an amber-brown colour, is slightly angulated, with a blunt subdorsal black-tipped spine on each side of the abdominal segments, and some small black spines on back of thorax; a large and almost triangular orange-yellow blotch upon back of anterior

abdominal segments ; wing-sheaths dark reddish brown, with the nervures well marked. These larvæ differed in no way from larvæ I have taken at the Duke of York Islands and New Britain, and which produced the blue variety *urcilliana*, Guer., and the usual golden-green form ; and I feel quite convinced that Kirby is correct in referring the five Australian varieties, and several others from New Guinea, Woodlark Island, Batchian, &c., to *Papilio priamus*, Linn., of which there is little doubt that they are merely local varieties. The chrysalids are also identical. Those I found were attached to the midrib of a very large leaf of some forest tree, and sometimes at a considerable distance from the food of the larvæ. Before suspending itself, the larva takes care to securely fasten the stem of the leaf at its base to the branch of the tree with strong threads of silk.

Papilio polydorus, Linn., one of the most abundant species met with. It flies in a light airy manner, generally quite straight, like *Euryeus* or *Acræa*, and appears to be a particularly easy butterfly to catch ; nevertheless it has a trick of dropping suddenly or twisting to one side, as one makes a stroke at it, and instead of having it in your net, as you confidently expected, you see it hurrying off among the brushwood or careering aloft far out of reach. *P. erithoneus*, Cram., one or two seen. *P. capaneus*, West., several observed, and one or two worn specimens captured ; young larvæ upon. *P. erectheus*, Don., common ; and larvæ of various sizes upon orange trees in the garden of Mr. Chester, P.M. These specimens were of the New Guinea form, which is larger and rather differently marked than those from New South Wales. *P. sarpedon*, Linn., several seen ; a rapid flyer. *P. agamemnon*, Linn., two or three seen, and one captured.

Euryeus cressida, Fabr., numerous.

Terias australis, Wall., *T. hecabe*, Linn., *Terias* sp., common amongst high grass, &c.

Pieris ega, Boisd., one male only.

Callidryas crocale, Cram., several.

Danais affinis, Fabr., not uncommon in the forest, where it was fond of alighting upon the extremities of dead twigs, a habit which is common to all the Danainæ. *D. petilia*, Stoll, common, but local.

Euphea sylvester, Fabr., very common in the forest, where it

delights to sit in little family parties upon some dead bough. *Euplœa* sp., possibly a local variety of *tulliolus*, Fabr.

Junonia orithya, Linn., common; but very wary and difficult to catch. *J. vellida*, Fabr., common.

Precis zelima, Fabr., several.

Rhinopalpa sabina, Cram.; this fine species was not uncommon in the forest, and was in good condition. They were usually to be found in pairs, though sometimes they were in family parties of six or seven, and were fond of settling upon the under side of a large leaf near the ground, and flew out suddenly as one passed; as a rule, if one kept quiet, they almost invariably returned to the same spot.

Doleschallia bisaltidæ, Cram., common. This butterfly, during the hottest part of the day, flies high, and keeps well out of reach; but towards the evening, or when passing clouds obscure the sun, it descends, and may then often be seen at rest on the under side of a leaf, when they may be easily caught if one approaches quietly. They are very pugnacious in their habits. One will take up his position upon a leaf at the extremity of some lofty branch, and from thence starts off and gives battle to every passing butterfly, returning, after the encounter, to its original position.

Hypolimnas alimena, Linn., plentiful, and in fine condition. *H. lasinssa*, Cram., common.

Neptis consimilis, Boisd.; this pretty species was tolerably numerous. It flies in a very airy manner, giving three or four flaps with its wings, and then floats gracefully to a leaf, where it settles with wings fully expanded. *N. shepperdi*, Moore. The above remarks apply to this species also.

Melanitis leda, Linn., a few only.

Mycalesis perseus, Fabr., a few, but in poor condition. *M. terminus*, Fabr., common, and in fine condition. These two species were found among high grass by the edge of the forest.

Ypthima aretous, Fabr., common with the above.

Cænonympha sp., common. This species also occurs near Sydney; but is unnamed in the local collections I have had access to.

Lycæna platissa, Herr.-Schaff., common. *L. salamandri*, Macleay, W., a few. *L. pygmæa*, Snell, one example. *Lycæna* sp.,

near *erinus*, Fabr., one only. *Lycæna* sp., three examples. *Lycæna* sp., one example.

Hypochrysops anacletus, Feld., three specimens of this beautiful species. *H. apelles*, Fabr., one example. *H. phorbas*, Fabr., several.

Amblypodia centaurus, Fabr.; this brilliant species was common, flying to and fro in front of low bushes. It was difficult to obtain in good condition, as it is very pugnacious in its habits, and both sexes are to be continually seen engaged in warfare. *A. micale*, Blanch., two or three.

Ismene exclamationis, Fabr., several. *Ismene* sp., several.

Pamphila augiades, (?) Feld., several. *Pamphila* sp., one or two. *Pamphila* sp., several.

Apaustus agraulia, Hew., common.

The above forty-eight species were the result of an afternoon's collecting at, I believe, a not very favourable time of the year. If so much was to be done in such a short time, it is reasonable to suppose that the list would have been very much increased if I could have had a few more days collecting, and if it had been at a more favourable time of the year. From what I saw of Thursday Island, I should judge that the larger islands, which are all well wooded, particularly Prince of Wales Island, would produce a greater variety of Rhopalocera, and all the species that have been taken at Cape York and other parts of the North Coast of Australia would be found upon them, as well as many New Guinea species, which, up to the present time, have not been recorded as Australian. I can imagine no better place than Thursday Island for a collector to make his head-quarters for a couple of months, for there could be no difficulty in working the other islands, as they are all easily accessible by boat, and there are houses upon all of them, so that comfortable accommodation could most likely be obtained. I am confident that many new species would reward a diligent collector.

In the above list it will be observed that many common species that ought to occur on this island were not observed upon this occasion, such as *Pieris teutonia*, *Danais chrysippus*, *D. erippus*, and others.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

LYCÆNA ARGIOLOUS.—I am very much surprised to find from the remarks of Messrs. W. Harcourt Bath (Entom. 29) and J. Jenner Weir (Entom. 50) that *Lycæna argiolus* is not double-brooded in the New Forest and some other localities in the South of England. There are certainly two broods in Essex and Suffolk; but as the individuals of the first brood are much more numerous than those of the second, I am quite disposed to agree with Mr. C. J. Biggs that the latter—like so many other second broods—is only partial. The idea of looking for the larva on mountain ash, crab-apple, and bramble blossoms is so decidedly novel that it could only occur to an original and enterprising mind; but though it has been seen to feed upon the tender leaves and unripe berries of the holly, I cannot help thinking that it is a flower-feeder as a general rule, though this is a difficult point to settle conclusively, as most of the examples which have been obtained in the natural state have been beaten from various trees and shrubs. Mr. Weir mentions that I have found it on *Rhamnus frangula* blossoms, and also that it was found by Mr. G. F. Mathew on flowers of *Escallonia* in June; and in the book from which he quotes ('Larvæ of British Butterflies and Moths,' Ray Society, 1886, p. 188) the Rev. J. Hellins notes its having been found by Mr. W. H. B. Fletcher at Worthing, on flowers of *Cornus sanguinea*. I have also beaten it from *Euonymus europæus* flowers, and strongly suspect that we have by no means exhausted the list of its food-plants at present. The mayor of Colchester, Mr. Laver, has drawn my attention to the extreme partiality of the perfect insect for the flowers of *Aucuba japonica*. In the churchyard of Holy Trinity parish, in this town, there are several of these shrubs, upon which the fruit comes to maturity; and, as *L. argiolus* frequents them in the spring, Mr. Laver thinks that it may assist in fertilising the blossoms; but I have never looked for the larva on this plant, though I have frequently seen the butterflies flitting about it in my own garden. I collected for years in this district without meeting with a single specimen; it then became common for several seasons, but has been comparatively scarce during the past three or four years. Mr. Harcourt Bath seems to consider

that it formerly enjoyed a much wider range than it does at the present day; but my idea is that in favourable seasons it is continually extending its range, whereas when the climatic or other conditions are adverse it is confined very much to headquarters. Here, it is principally found in one or two places where holly is plentiful, and some seasons a specimen is rarely seen elsewhere; but at other times it is to be met with in gardens and lanes throughout the district, and even in the streets of the town; and Dr. Bree has drawn my attention to its periodical abundance about the ivy which grows upon Colchester Castle. Mr. Harcourt Bath's own remarks seem to bear out this view, for he says, "When the butterfly is very abundant it occurs all over the park, and sometimes even in the outskirts, though at other times it occurs only in two or three localities;" and it seems reasonable to conclude that what is happening at Sutton Park and here is also taking place in every county in which the species occurs.—W. H. HARWOOD; Colchester, March 1, 1886.

LYCÆNA ARGIOLOUS.—This butterfly is of regular and tolerably common occurrence in this neighbourhood, where there are few hollies, but ivy is plentiful in the hedgerows. As far as my experience goes there are invariably two broods in the season: the first, late in April or beginning of May, nine-tenths of which are males; the second, in August, sometimes lasting into September, and it was once seen during the first few days of October; I forget the year, but well recollect the circumstance. This latter brood seems to consist principally of females. I have noticed also that this little butterfly seems much attached to a place. There is a small shrubbery at the side of my late residence, containing, amongst other trees and shrubs, *laurustinus* and candleberry myrtles, but not any hollies. When the species was out, although perhaps none might be seen about on the wing at the time, I could yet, in suitable weather, always make sure of taking them at this particular spot, and have been accustomed to sit down and wait for them, as one does for *Apatura iris*. I took as many as seventeen in an hour one morning in this way, several of them off one particular sprig of flowers of the candleberry myrtle, on which shrub, as well as on the *laurustinus*, they were very fond of settling. May not the larvæ possibly feed on either or both of these?—E. SABINE; 22, The Villas, Erith, March, 1886.

SESIA TIPULIFORMIS.—The larva of this beautiful clear-winged moth should be looked for now and next month in the currant twigs; perhaps a few hints as to the easiest way of finding it may be of use. I feel sure that a great many collectors overlook this insect, owing to its singular habits. Select black, red, and white currant bushes that have been pruned every year. Take the shoots that were cut in January or February of the preceding year. These shoots will be found close to those pruned this year. Carefully split them open, and if the larvæ occur in the district it will soon be found, and not far from the end of the shoot, in the winter cocoon. If looked for in the young shoots which grew last year, but very few will be discoverable, for the larvæ decidedly prefer the cut end of the shoot. As an instance of this, I put in about 200 cuttings of the black currant, and nearly all of these contained larvæ the following year, but since then I have been unable to find a single larva in them, owing to the black currants not being pruned. If a larva occurs in an unpruned shoot, it will be seen that it enters the shoot through a bud. I may add that I have cut thousands of the young shoots this year, and could only find two instances of the larvæ occurring in them. I should like to hear whether those who have taken these larvæ find their experience coincides with mine.—R. NEWSTEAD; 63, Philip St., Chester, March, 1886. [Among several of the smaller Sesiidæ the habit obtains of the females depositing their ova round the edge of the bark of recently cut stems of trees, in which the larvæ usually feed. This especially applies to *S. asiliformis* (*cynipiformis*) on the stumps of oaks felled in the previous spring, and *S. culiciformis* in stumps of birch. Smaller stumps appear to be preferred. To successfully find these, prise off the bark during April, when the pupæ may be found towards the end of the month. A better plan still is to saw off about six inches of the stumps where signs of ejected frass indicate the presence of larvæ. Do not keep the pupæ or cut stems too dry, but bright sunshine appears absolutely necessary for the successful development of the moths, therefore, allow the *morning* sun to shine upon the breeding cage containing them, for it is then they emerge.—ED.]

ENDROMIS VERSICOLOR.—In May, 1883, I received eleven ova of *Endromis versicolor*, which were laid in a row, side by side and

touching, on a small twig of birch. On June 1st they all hatched, and it was curious to see how each larva came out of the same end of the egg, and made a similar and perfectly circular hole in it. The egg-shells remained with a beautiful mother-of-pearl gloss on them. The young larvæ seemed very lively and healthy at their birth, and soon began eating the young birch leaves with which I supplied them. Their first change took place on June 9th, the second on June 19th and 20th, the third on June 29th, and the last moult was on July 9th, 10th, and 11th. Thus they seemed to change with great regularity after every ten days, and between each moult they eat heartily but not voraciously, growing rapidly at the same time. One out of the eleven unfortunately died in its "childhood" from some unknown cause. Some two days before spinning up they left off eating and began to lose their brightness of colour, ultimately turning to a dirty, brownish green, with a decided dark pink tint along the back. Before settling on their place for pupation, they became exceedingly restless, crawling about with rapid motion for some hours, and emitting some very wet, dark-coloured excrement. They went down into the earth only about half an inch or so, where they made a loose cocoon of earth and silk. The dates of their spinning up were as follows:—Two on July 22nd, one on the 25th, two on the 27th, two on the 28th, two on the 29th, and one not until August 5th. The first emerged the following 16th of March, and another on the 22nd; both were very fine male specimens. But no more appeared in 1884, although they kept alive. During the winter of 1884-5 I placed the remaining six pupæ (two I had sent away) with some others in a greenhouse kept at a temperature of about 65°, and kept them damp. The result of this experiment was that a fine male emerged on January 21st, 1885; another on the 30th; a female on February 5th; another on the 7th; and a third on the 13th; the sixth died. All were very beautiful specimens, and not in any way crippled.—J. SEYMOUR ST. JOHN; Chalfont St. Peter, Slough, Feb. 19.

HABITS OF THE LARVA OF *POLIA FLAVICINCTA*.—One summer day of last year I observed that the flowers on several plants of foxgloves (*Digitalis*) in my garden were eaten off, apparently by some larva. At first the depredator was not to be found, but a closer search discovered him stretched at full length on the stalk of the plant, and completely concealed among the im-

mature buds at the top of the spike. Two full-fed larvæ thus found produced imagos of *P. flavicincta*. Last year I observed the same thing, and have also found the larva on the rose and the honeysuckle, in each case feeding upon the flowers, not the leaves.—H. MILLER; Ipswich.

GEOMETRA PAPILIONARIA AT HIGHGATE.—Referring to Mr. A. E. Tonge's note (Entom. 65), I find from my diary that I took two good specimens of the above-mentioned insect in one evening in August, 1877, at the gas lamps near Church Bottom Wood, Highgate. They are both males.—W. J. V. VANDENBERGH; 5, Yale Terrace, Colworth Road, Leytonstone.

LACCOPHRYS CEPHALOTES, Ratz.—At the end of last summer I took an insect which is, without doubt, a male of this interesting species, which differs from all the other genera of Bracons in the attachment of the abdomen; instead of springing from the lower part of the metathorax in the usual manner, it is inserted high up above the coxæ, making the side view very like a *Fœnus*. Ratzeburg wrongly identifies it with Wesmael's *Opius*, from which it is certainly distinct, as the hind head is very distinctly margined, and, though it is now referred to the Diospilidæ, it does not accord very well with that group. To me it seems to have more affinity with the Ichneutidæ. Its general appearance is very like *Ichneutes reunitor*, and the radial areolet is very little longer than the stigma. The large buccate head and structure of the abdomen make it easy to be recognised. It does not appear to have been taken previously in England.—E. CAPRON; Shiere, Jan. 7, 1886.

ENTOMOLOGICAL SOCIETY AT OXFORD.—I should be very glad if any of your readers could give me particulars of any Entomological Club or Society in Oxford. Also of any hints as to the working of the surrounding country.—L. SURRAGE; Hertford College, Oxford, March 10, 1886.

ERRATUM.—Page 64, line 9, for "opening" read "spinning."

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*March 3rd, 1886.*
R. M'Lachlan, F.R.S., President, in the chair. Mr. J. M. C. Johnston was elected a Fellow, and Cavaliere Piero Bargagli, of

Florence, formerly Secretary of the Entomological Society of Italy, was elected a Foreign Member. Mr. Pascoe exhibited a curious larva, probably of a *Papilio*, from Paris; and a pupa-case of *Anosia plexippus* (*Danaïs archippus*), from the same locality. Mr. W. J. Williams exhibited, on behalf of Mr. C. Bartlett, a gigantic hairy and spiny larva, perhaps allied to *Gastropacha*, from Madagascar. Mr. C. O. Waterhouse exhibited *Rutela rufipennis*, *Doryphora haroldi*, and some other undescribed species of Coleoptera from Columbia. Mr. Billups exhibited a specimen of *Cholus forbesii*, a South American species, found alive in a horticultural sale-room in London. Mr. Eland Shaw referred to the exhibition, at the last meeting, of *Tettix australis* from New South Wales, and called attention to the fact that the aquatic habits of certain species of the genus *Tettix* in India had been previously recorded by Leopold Fischer. Dr. Fritz Müller communicated a paper on Fig Insects from the neighbourhood of the River Itajahy, South America; and Prof. Meldola exhibited, on behalf of Dr. Fritz Müller, a number of specimens of the insects described in the paper. Mr. E. B. Poulton, M.A., F.Z.S., read "Further Notes upon Lepidopterous Larvæ and Pupæ, including an account of the loss of weight in the freshly-formed pupa." The paper included notes upon points in the ontogeny of *Smerinthus* larvæ, and a description and figure of the bifid and hairy caudal horn in the newly-hatched *Smerinthus populi*. The adult larva of *Acherontia atropos* was compared with that of *Sphinx ligustri*, and the as yet unknown appearance of the former in earlier stages was predicted. Hitherto unnoticed eye-like marks were pointed out in the terrifying attitude of *Chærocampa elpenor*, and the terrifying attitude of *Dicranura vinula* was described, and its defensive fluid was shown to be strong formic acid. An eversible gland was described in *Orgyia pudibunda*, and the protection of *Acronycta leporina* was explained by its resemblance to a cocoon and the darkening of its hairs when full-fed. A valvular aperture in the cocoons of *Chloephora prasinana*, &c., was described, enabling the imagos to emerge. There were also notes upon *Paniscus cephalotes*, parasitic on the larva of *D. vinula*, and tables showing the immense loss of weight in the newly-exposed lepidopterous pupæ due to evaporation from the moist skin. Mr. Poulton also exhibited larvæ of *Paniscus cephalotes*. A discussion followed the reading of this

paper, in which Messrs. Kirby, White, Slater, and Poulton took part.—H. Goss.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—February 18th, 1886. R. Adkin, F.E.S., President, in the chair. Mr. Rose exhibited a comparative series of *Bryophila perla*, Fb., from Lea Bridge and Eastbourne, and made interesting remarks thereon relative to variation of the species according to the surrounding locality. Mr. Hall, series of *Cleoceris viminalis*, Fb., and *Xanthia fulvago*, L., both bred from larvæ obtained from Derbyshire, each exhibiting a marked richness of colour unusual in these insects. Mr. South remarked that the series of *X. fulvago* were curious in colour, and one or two of them appeared to be hybrids between *X. fulvago* and *X. flavago*, Fb. Both Mr. Tugwell and Mr. Adkin exhibited *Crambus inquinatellus*, Schiff., *C. contaminellus*, Hb., *C. geniculeus*, Haw., and specimens of the probably new *Crambus*. Mr. Tugwell made some interesting remarks upon the genus. Mr. Adkins said it had been suggested that the Deal insect was *C. poliellus*, Tr., which was found in Germany and Russia. Mr. Billups brought the following species of Coleoptera *Meligethis exilis*, Sturm., and *Anthicus schaumi*, Wool., from Lincoln; *Hydnobius perrisi*, Fair., *Mycetoporus nanus*, Grav., and *Omalium rugulipenne*, Rye, from Hartlepool: also three species from West Africa belonging to the family *Cetoniidae*—*Ceratorhina morganii*, White; *C. grallii*, Buq.; and *C. hornimanii*, White; and read some observations upon his exhibit.

March 4th, 1886. R. Adkin, F.E.S., President, in the chair.—Mr. Billups exhibited a female specimen of *Sirex juvencus*, and read remarks upon this and allied insects. Mr. Wellman exhibited a series of *Bankia argentula*, Hb., from the Cambridgeshire Fens. Mr. Oldham, dark forms of *Epinephele ianira*, L., taken in North Wales. Mr. South, two extreme specimens of *Lycæna icarus*, Rott., one of them a remarkably small specimen, the expanse of wings being only ten lines, and the other a large example from Sligo, which measured 1 inch 5 lines. Mr. Frohawk exhibited a long and varied series of *Melitæa aurinia*, Rott., with coloured drawings of the larva and pupa; also specimens of an ichneumon (*Panteles glomeratus*) infesting them. Mr. Tugwell again exhibited specimens of the supposed new *Crambus*, for which Mr. Tutt had suggested the name of

cantiellus. Mr. Tugwell at some length gave his views upon these intricate forms.* There were also exhibits in other branches of Natural History.

REVIEWS.

Our Insect Allies. By THEODORE WOOD. Small 8vo. London: Society for Promoting Christian Knowledge. 1885.

Our Insect Enemies. By THEODORE WOOD. Small 8vo. London: Society for Promoting Christian Knowledge. 1885.

ANYTHING in book-form which helps to foster the rapidly increasing taste for Natural-History study among the general public is to be welcomed.

These two little works are constructed on the same lines, and are pleasantly written compilations. It would, however, have shown better taste if the writer had given his authorities a little more frequently, and not ignored the valuable work done by such eminent entomologists as Miss Eleanor Ormerod and others, which is largely used but not acknowledged.

The books are illustrated plentifully by woodcuts, and ought to largely assist those whose desire is to get rather a general than a scientific knowledge of the subjects discussed. As school prize-books both will recommend themselves.—J. T. C.

Proceedings of the Dorset Natural History and Antiquarian Field Club. Vol. VI. (for 1884). Sherborne. Foolscape 4to. 183 pp.; 7 plates.

THIS volume contains a list of the Lepidoptera of the Isle of Purbeck, by E. R. Bankes and Rev. C. R. Digby, which, though evidently very incomplete, gives 40 Diurni and 839 moths. The arrangement of the list is somewhat defective, there being but few authorities given for the various records. The introduction mentions the close connection of the fauna of the island with that of the New Forest, several local insects being common to both, such as *Emydia cribrum*, *Acidalia straminata*, *Eupæcilia ambigua*, &c. This paper is illustrated by a plate, with figures of

* See article by Mr. Tugwell, p. 75 of present number.—Ed.

Nephopteryx genistella (coloured), cases of *Coleophora ahenella*, and imago and cases of *C. conyzæ*.

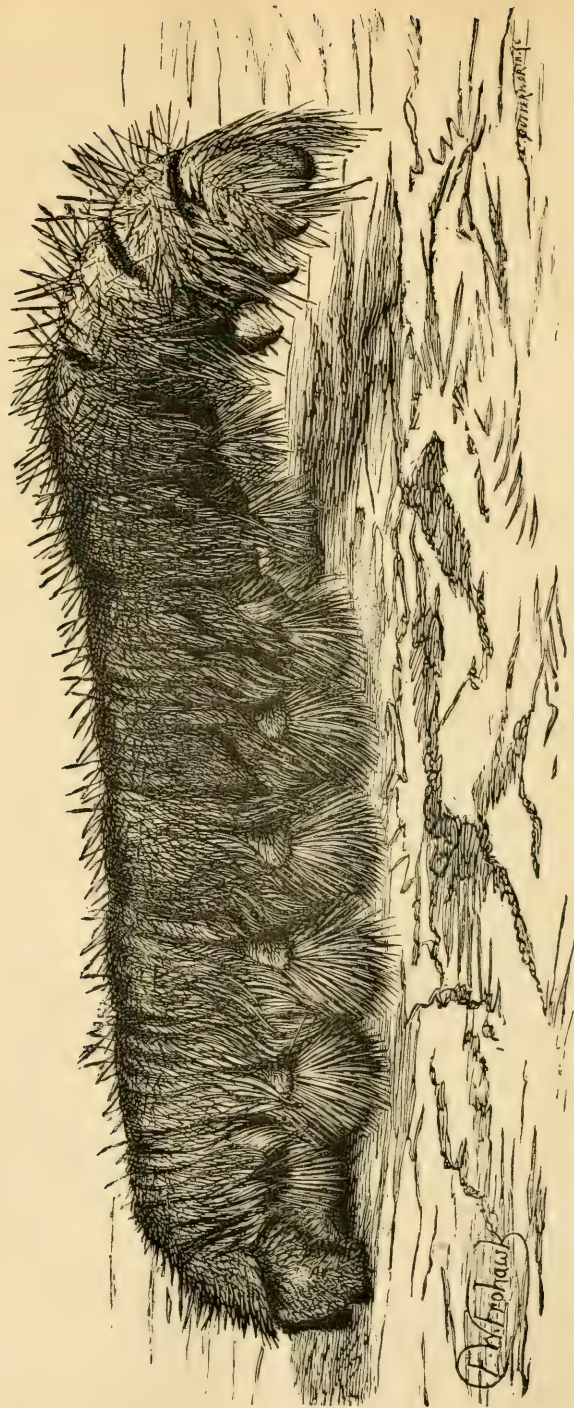
The other paper of interest to lepidopterists is one by the Rev. O. P. Cambridge, illustrated by a coloured plate containing three varieties of *Hypena obsitalis*. There are also ten other papers, including "New and Rare British Spiders," by the same author; "Land and Fresh Water Mollusca of Dorsetshire," six plates; &c.

The County Natural History Field Club of Dorsetshire is evidently in a vigorous condition, and deserves the support of others than local men by the purchase of these 'Proceedings.'—J. T. C.

Abstract of Proceedings of the South London Entomological and Natural History Society for 1885. London: Secretaries of the Society, 1886.

THE steadily increasing vigour and energy of this Society is illustrated by the improved character of their annual "Abstract of Proceedings." From these we gather that the meetings and excursions have been numerous attended, and that the various exhibitions brought by members have been something more than mere cabinet specimens for show, being in most instances accompanied by lengthy notes and observations. The latter include several valuable papers, one of which, by the late President, Mr. R. South, on "Some Observations on Protective Coloration of Lepidoptera," is printed in full at the end of the "Abstract," and will be found well worth perusal, as a thoroughly-prepared digest of the whole subject. Among the other papers and observations are extracts from "Do the Lower Forms of Animal Life feel Pain," by W. H. T. Dobson, which was illustrated by diagrams of the anatomy of the Invertebrata; Mr. Jenner Weir upon some gigantic Arachnida of the order Solpugidae taken by Mr. G. A. Farini in the Kalahari Desert of Africa. Mr. T. R. Billups had notes and observations at almost every meeting, all of value, upon the orders of Coleoptera and Hymenoptera; Mr. Adkin upon the life-history of certain Geometrae and other subjects; Mr. Step on the Fresh-Water Mussels, &c.

This society is well worthy of entomologists and naturalists generally now that the council has undertaken the valuable work of forming a general list of the fauna of the counties south of London, and those who are not already members cannot do better than join its ranks.



A GIANT LEPIDOPTEROUS LARVA.
(NATURAL SIZE).

THE ENTOMOLOGIST.

VOL. XIX.]

MAY, 1886.

[No. 276.

AN AFRICAN LEPIDOPTEROUS LARVA.

THE drawing issued with this number of the 'Entomologist' is from a larva which was found in a bottle of zoological "mixed pickles," sent in spirits of wine, from South Africa. The species is unknown. Although to the European entomologist this may seem a veritable giant among caterpillars, it is by no means an uncommon size for Africa. There are several subtropical Bombyces which nearly or quite reach it in bulk, while the larva of *Sphinx desmoulinii* at times even exceeds this size. This latter larva is one of the most interesting found in Africa, for unlike the Sphinges generally it is furnished with long black spines on each segment, which are much more formidable looking than the usual anal spine of the group. At first sight one does not see the advantages of these spines in a glaucous larva, but we know that in their younger stages the larvæ of *S. desmoulinii* are in appearance almost identical with the nauseous and acrid larvæ of certain Acraeidæ, which are never eaten by the usual insect enemies. These are also spined in like manner; and it is undoubtedly one of those cases of self-protection by natural mimicry which are so exceedingly interesting.

We are indebted to the editor of the 'Field' for the use of this woodcut.

JOHN T. CARRINGTON.

TEPHROSIA CREPUSCULARIA AND *T. BIUNDULARIA*.

BY J. W. TUTT.

I THINK many of our entomologists will disagree with the remarks of your correspondent the Rev. G. A. Smallwood (Entom. 39) that *Tephrosia crepuscularia* and *T. biundularia* cannot be definitely distinguished. Perhaps they cannot, very well, in a written description; but there is a good deal in the general appearance of the insects which serves to distinguish these moths as the distinct species I believe them undoubtedly to be. I believe, too, if the times of appearance were carefully studied that mistakes would be few and far between. In our southern woods *Tephrosia crepuscularia* occurs in March and the early part of April; these are generally of a large size. A second brood occurs in nature in the middle of July; these are much smaller, not larger than ordinary *T. luridata* (*extersaria*), whilst the first brood are about the size of an average *T. consonaria*. The markings of these may be fairly called a warm brownish grey; and in the different forms I have from various localities, where I have no doubt of the date, this remark as to colour holds good.

Tephrosia biundularia occurs on the wing in the latter part of May and in June. In an ordinary season the last fortnight of May can be generally depended on to get fine specimens. The typical *T. biundularia* are much whiter in ground colour than *T. crepuscularia*,—especially is this the case with the females,—and, although slightly marbled with pale brown, this colour seems independent of, and does not form a part of, the ground colour, as in the allied species. The black lines in *T. biundularia* seem more decidedly black and sharply marked (probably owing to the cleaner ground colour) than in *T. crepuscularia*.

The different intermediate forms leading up to the beautiful varieties obtainable in these species will perhaps show more clearly what I mean, when I say that generally these forms of *T. crepuscularia* lead up to insects totally suffused with dark brown, and in *T. biundularia* they lead up to specimens which, in their extreme forms, are totally suffused with blackish grey. I have a beautiful series of this latter insect, the varieties coming chiefly from Barnsley and Derby. Those from Barnsley are

dark and well marked, but are not of so deep or rich a colour as those from Derby; but yet I believe in every case the black predominates over the brown. I believe, however, if our entomologists would keep distinct all specimens captured during March and the early part of April, and in the north up to the end of that month, from those captured during the month of May and June, and compare them, they would find a very considerable difference; and if in exchanging these species we were to get dates from our correspondents, we should be less liable to mistakes, and in time, by using a little discretion, get a fairly authentic series of these undoubtedly difficult species.

Of course in a very early season, as in 1882, both species will occur earlier; but the fact remains that the earlier *T. crepuscularia* is nearly or quite over before *T. biundularia* puts in an appearance. It was so in that season when *T. crepuscularia* occurred at the end of February, and *T. biundularia* at the end of April; but there was no mistaking the species. It has often struck me that these two moths are sent away by entomologists to correspondents in mistake, as much through the discrepancies in the descriptions given in the 'Manual' and in Newman's 'British Moths' as from want of care in distinguishing them. No one, I think, can compare them without seeing how much at variance the descriptions are. Newman states in his description of *T. crepuscularia*, "yellow-brown tinge; appearing in April"; I think this applies well to our earlier species, generally known as *T. crepuscularia*. Of *T. biundularia* he says, "grey; occurring in April, and generally again in July"; yet says that "eggs were laid by captured female from 21st to 27th of May;" thus proving the proper time of appearance to be the latter half of May. He further states that the larvæ hatched on 5th of June, but does not say that they produced imagines the same season. His description applies well, however, to our paler species occurring here at the end of May and beginning of June. Now what I beg to suggest is, that it is the earlier browner species, "*crepuscularia*," that is double-brooded. It is double-brooded in our Kent woods; and Mr. Ovenden, of Strood, has more than once bred the July brood; and I capture the second brood of *T. crepuscularia* every season in the woods near Rochester, within a week or two of the disappearance of *T. biundularia* from the tree-trunks.

In Stainton's 'Manual' the description of *T. crepuscularia* and *T. lariciaria* (*biundularia*) are so much alike that it is difficult to say which is meant; but if anything, I should say *T. lariciaria* is given as the browner species, and thus agrees with Newman's *T. crepuscularia*. This is borne out by the date of appearance, which is given as the end of March to the beginning of May, which time agrees with the appearance of Newman's *T. crepuscularia* in our woods. He further states, under the head of *T. crepuscularia*, "appears April and beginning of May," showing that nothing was apparently known then of our end of May or early June species, or if so that this was meant for the late species.

I cannot help thinking, that with such a mixture as this to start with, it is any wonder that even good entomologists go wrong. Newman describes the early species, and gives April as its date only (no mention of its being double-brooded); he then describes the late one, and gives the date for this also as April, and again in July, making this the double-brooded species. It seems to me quite clear that his description applies to a moth which does not generally occur until the middle of May, and which, so far as I know, is not double-brooded, but comes between the two broods of the closely-allied species, which he gives as single-brooded.

The 'Manual' treats them both as single-brooded species, and leads us to believe that neither *T. biundularia* (*lariciaria*) or *T. crepuscularia* occur after the beginning of May. The fact is they both do,—the *only* brood of the later species, and the *summer* brood of the early one. If some older entomologist, who knows more about the matter than I do, can tell us whether we are right or wrong in calling the earlier and double-brooded species *T. crepuscularia*, and the single-brooded intermediate species *T. biundularia*, or not, I am sure many entomologists besides myself would offer their hearty thanks. I have called the early species throughout *crepuscularia*, because in Mr. Coverdale's collection I find German specimens, agreeing with our early ones, labelled *Tephrosia crepuscularia*; and I have assumed that on the Continent the early brood is so known.

Merrin's 'Lepidopterist's Calendar' also assumes that the earlier species is *T. crepuscularia*, and the later one *T. biundularia*; and curiously enough he does not notice that either is

double-brooded, although it states that the larvæ of the earlier species occur in August, whilst that of the later species can be found in June and July.

Rayleigh Villa, Westcombe Park, S.E., February, 1886.

[Of the five insects embraced in the genus *Tephrosia*, three of them—*consonaria*, Hb., *crepuscularia*, Hb., and *biundularia*, Bork.—bear such a strong resemblance to each other that mistakes in their identification are apt to occur. Typical *consonaria* is readily separated from its near allies; but some of the forms of this species occasionally met with are perhaps not so easily distinguished therefrom. The two insects known as *crepuscularia* (double-brooded) and *biundularia* are so closely similar that their separation is always a matter of no small difficulty to many. *Crepuscularia* and *punctularia*, Hb., have a co-extensive area of distribution in Europe, *consonaria* is found in all parts of Central Europe, except perhaps Holland and Russia; its range also extends eastward to the Amoor. *Luridata*, Bork. (= *extersaria*, Hb.), is also a Central European species, but it does not appear to occur in North Russia or North Germany. *Biundularia* seems to be confined almost entirely to Germany and Great Britain; as a British insect it is not peculiar to any particular portion of these islands, but occurs pretty generally throughout the kingdom, and is usually found in the same localities as *crepuscularia*.—R. S.]

NOTES ON MICRO-LEPIDOPTERA.

BY ALFRED THURNALL.

DURING the past season of 1885 I have taken and bred a good many species amongst the Tortrices, and perhaps the following list may be acceptable to some of your readers, as an encouragement for them to work out this group for themselves.

Tortrix podana, *T. xylosteana*, *T. rosana*, *T. heparana*, *T. ribeana*, *T. corylana*, *T. unifasciana*, *T. viridana*, *T. ministrana*,—all the foregoing common, and generally distributed. *T. sorbiana*, two bred from birch, Wanstead. *T. forsterana*, six bred from larvæ obtained at Whittlesford; spun up in ivy leaves.

Dichelia grotiana, a few beaten from birch at Wanstead in July.

Peronea sponsana, common at Loughton amongst beech. *P. comparana* and *P. schalleriana*, six of each beaten from blackthorn, August 15th. *P. variegana* and *Teras contaminana*, generally common amongst whitethorn.

Dictyopteryx leflingiana, *D. holmiana*, *D. bergmanniana*,—all generally common.

Argyrotoxa conwayana, common amongst privet bushes.

Ptycholoma lecheana, bred and beaten from birch, &c.

Penthina corticana, common on birch trunks, Wanstead. *P. pruniana*, *P. betulatana*, *P. ochroleucana*, *P. variegana*,—all fairly common, Loughton, &c. *P. gentiana*, a score bred from teasle-heads. *P. sellana*, one at Box Hill, July 5th. *P. fuligana*, a series bred from larvæ obtained at Wicken in May; and *Antithesia salicella*, two only at Wanstead, on willow.

Hedya ocellana and *H. neglectana*, very common almost everywhere. *H. aceriana*, two only on poplars, Wanstead.

Spilonota trimaculana, *S. roborana*, and *Pardia tripunctana*, common amongst wild roses.

Aspis udmanniana, a series bred from bramble.

Sericoris urticana and *S. lacunana*, swarming almost everywhere.

Roxana arcuana, not rare at Loughton among bracken.

Orthotania striana, on heathy ground, not rare.

Eriopsela fractifasciana, four at Box Hill, May 5th.

Cnephasia musculana, a few specimens only, Loughton, May.

Sciaphila nubilana, *S. subjectana*, *S. virgaureana*,—all very common, and generally distributed.

Capua favillaceana, not common, end of May.

Bactra lanceolana, generally common in marshy places.

Phoxopteryx uncanana, generally common in heathy places. *P. biarcuana*, one beaten from tallows, Loughton, June 20th. *P. comptana*, swarming in Headly Lane, May 5th. *P. mitterbacheriana*, larvæ common on oak, and more so on beech, at Loughton, Wanstead, &c.

Grapholitha ramella, not common, Wanstead only. *G. nisella*, not common, Wanstead, on aspens. *G. nigromaculana*, larvæ common in flowers of ragwort. *G. subocellana*, common amongst tallow in July. *G. trimaculana*, swarming amongst elm, Wanstead.

Hypermercia cruciana, beaten out of tallows, Loughton.

Batodes angustiorana, swarming round oaks, Loughton, &c.

Padisca bilunana, common on birch trunks. *P. corticana*, common on oak trunks everywhere. *P. profundana*, a few from oak and whitethorn. *P. occultana*, two beaten from fir, Headly Lane. *P. solandriana*, common amongst birch trees.

Ephippiphora cirsiiana, a series bred from thistle-stems. *E. pflugiana*, two bred from pupæ taken at Whittlesford. *E. brunnichiana*, larvæ common in coltsfoot roots, December. *E. fenella*, larvæ common in

mugwort roots, December. *E. nigricostana*, a series bred from larvæ taken at Whittlesford, and I have since (December 15th) found it at Wanstead in *Stachys* roots. *E. trigeminana*, fourteen bred from ragwort roots. *E. obscurana*, one at rest on an oak, Wanstead, June 7th.

Semasia ianthinana, a few larvæ, of what I suppose to be this species, feeding with *Laverna atra* in hawthorn berries, Loughton, September 4th. *S. rufillana*, larvæ very common in *Daucus carota* seed-heads, September, on railway banks. *S. wæberiana*, not common here, two near Loughton.

Coccyx strobilella, bred from spruce fir cones, May. *C. splendidulana*, three beaten from oak, Loughton. *C. argyranæ*, very common on trunks of oak. *C. tadella*, swarming among spruce firs. *C. nanana*, one only in Headly Lane, July 5th.

Retinia buoliana, generally common amongst Scotch firs. *R. turionana*, one bred, together with a lot of ichneumons from full-fed larvæ, taken near Box Hill, April.

Carpocapsa grossana, six beaten from beech at Loughton, June 29th; three taken in Headly Lane, July 5th; larvæ very common in beech nuts at Loughton in October.

Opadia funebrana, larvæ very scarce this season in plums.

Endopisa nigricana, larvæ very common in sweet-pea pods, Whittlesford.

Stigmonota leguminana, one beaten from blackthorn, Loughton, June 28th. *S. perlepidana*, a few among vetch at Loughton. *S. nitidana*, larvæ common on oaks at Wanstead. *S. flexana* (*weirana*), larvæ common on beech at Loughton. *S. regiana*, a series bred from sycamore bark, Wanstead. *S. roseticolana*, four bred from about forty larvæ found feeding in the "hips" of the wild rose, September, 1884. *S. germarana*, one beaten from oak, Loughton, June 28th.

Dicrorampha petiverella, larvæ very common in yarrow roots. *D. politana*, larvæ not common in yarrow roots. *D. simpliciana*, rather local in mugwort roots.

Pyrodes rheediella, a few beaten from whitethorn at Loughton.

Catoptria albersana, one seen amongst honeysuckle, Brentwood. *C. ulicetana*, common in every furze bush, and very variable. *C. hypericana*, common at Box Hill, Whittlesford, &c., amongst *Hypericum hirsutum* and *H. perforatum*. *C. cana* and *C. fulvana*, a few specimens only at Box Hill, in July. *C. candidulana* and *C. æmulana*, larvæ common on the banks of Thames.

Symæthis oxyacanthella, common amongst nettles, &c.

Eupæcilia nana, very common amongst birches, Wanstead, &c. *E. maculosana*, very common amongst wild hyacinth. *E. angustana*, swarming in hundreds over ling at Loughton. *E. ulana*, larvæ common in stems of *Alisma plantago*, Hackney Marshes, &c. *E. notulana*, larvæ, of what I suppose to be this species, in stems and root-stocks of water-mint, November 15th. *E. rupicola*, a series bred from old dead stems of hemp

agrimony. *E. roseana*, a series bred from teasle-heads from Brentwood. *E. ciliella*, at Box Hill, but not commonly; larvæ in cowslip seeds.

Xanthosetia hamana, common, but local among thistles.

Chrosis alcella, common at Box Hill, &c.

Lobesia reliquana, very common at Loughton.

Argyrolepis subbaumanniana, two specimens at Box Hill. *A. badiana*, larvæ, together with *Parasia lappella*, in seed-heads of burdock.

Conchylis dilucidana, Box Hill, and a good many larvæ last month in wild parsnip stems at Whittlesford. *C. smeathmaniana*, larvæ common in seeds of yarrow.

Aphelia osseana, common in July, Box Hill, &c.

In addition to the above, I have taken the following species of Crambidae and Phycidae:—

Chilo phragmitellus, larvæ very common at Wicken.

Schænobius forficellus, common round ditches at Wanstead.

Platytes cerussellus, very common on Box Hill, July 5th.

Crambus falsellus, six bred from larvæ feeding under moss on an old wall at Whittlesford. *C. pratellus* and *C. pascuellus*, generally common. *C. pinellus*, three at Loughton, from one of which I obtained a good many eggs. *C. perlellus*, a very local insect here; took three on Wanstead Flats, and the var. *dealbella* at Brentwood. *C. selasellus*, not common, Hackney Marshes. *C. tristellus*, very common in damp places. *C. inquinatellus* and *C. geniculeus*, very common, Loughton, &c. *C. culmellus* and *C. hortuellus*, common almost everywhere.

Ilithya semirubella, not rare on Box Hill in July.

Ephestia elutella, a few specimens in the house.

Cryptoblabes bistriga, beaten from oak at Loughton, both in the larva and imago state.

Phycis betulæ, three or four spun-up larvæ on birch, Wanstead. *P. fusca*, two at Brentwood amongst heath. *P. adornatella*, swarming on Box Hill, end of June. *P. ornatella*, common on Box Hill in July.

Nephopteryx spissicella, larvæ and imagos beaten from oaks at Loughton, &c.

Rhodophæa consociella, a series bred from oak, Loughton. *R. advenella*, one bred and two beaten from whitethorn, Loughton; the beautiful larva incorrectly described in the 'Manual.' *R. marmorea*, beaten from blackthorn, Loughton. *R. tumidella*, one bred from oak leaves, Loughton.

Aphomia sociella, one at Loughton, and commonly at Whittlesford.

By the above list it may be seen how much may be done by anyone who, even like myself, has only a few hours to spare in each week to devote to collecting.

LEPIDOPTERA IN NORTH-WEST IRELAND.

BY PERCY H. RUSS.

ON the whole the past season was a fairly good one in Sligo. The early portion was undoubtedly bad; cold and windy weather prevailed throughout the sallow season; very few insects visited the blossoms, and those only of the commonest; *Tæniocampa gothica*, *T. incerta*, *T. stabilis*, and *Anticlea badiata* were the only ones taken by me. April was no better than March, but in the early part of May things began to improve; still they were very bad, and Mr. Willitts, of Sheffield, collecting a few miles from me, for Col. Cooper and Mr. Kane, wrote to say he would come and try my neighbourhood, as he could take nothing where he was. The dwarf sallows on the sand-hills were then in full blossom, so we tried them at dusk and after dark with a very brilliant lamp, but did not see a single moth, though we hoped to get *T. opima*. The next day was devoted to larvæ, and by beating old lichen-covered apple trees got about two dozen of *Cleora lichenaria*, then nearly full-fed. From juniper numbers of *Thera simulata* and an odd *Eupithecia sobrinata*. Later in the month I determined to try for larvæ of *Plusia interrogationis*, and succeeded in taking a considerable number. Up to this the only imagines captured worth recording were *Lobophora viretata*, *Eupithecia coronata* (the first taken by me here), *Larentia salicata*, never before seen excepting in the autumn, and *Dianthæcia capsophila*. In June things began to mend, and the remainder of the season was fully up to the average. The novelties to me in this district were *Acronycta menyanthidis* and *A. euphorbiæ* v. *myricæ*, *Dianthæcia nana* (*conspersa*) at flowers of *Silene maritima*, and *Oxyptilus parvidactylus* at *Eupatorium cannabinum*. The most remarkable event in my experience was taking *Acherontia atropos* on the 14th of the month. In July (probably the best month), *Plusia bractea* and *P. interrogationis*, *Emmelesia tæniata* and *Chærocampa porcellus*, were taken here; the month was hot and dry; fair numbers of each of these occurred, and of course many others. *Eupithecia debiliata* was more abundant than usual, and seemed to be as partial to holly as *E. tæniata*, the two species several

times being beaten out at the same time from the same tree. A specimen of *Cidaria suffumata*, taken on July 3rd, was apparently just out. Is this species sometimes double-brooded? During this month I captured more than one of an interesting variety of *Lycæna icarus* (*alexis*); the upper side of hind wings has a distinct marginal row of black spots. With August appears the army of Agrotidæ; *Agrotis vestigialis* (*valligera*), *A. cursoria*, *A. præcox*, *A. tritici* in their many varieties, swarmed on the sand-hills. The novelties were *Melanippe galiata*, *Botys asinalis*, and on the last of the month, at flowers of tobacco, *Sphinx convolvuli*. *Chærocampa celerio* I believe I saw; it is not impossible, as a specimen was captured in the neighbourhood a few years since. The white-flowered tobacco (I think it is *Nicotiana affinis*) appears to me to be well worth growing; the flowers should prove very attractive to the Sphingidæ. In September the weather became stormy; *Epunda lutulenta*, vars. *lunbergensis* and *sedii*, were the prizes during that month. They occurred in greater numbers than in previous years. On the 17th I captured fifteen, but unfortunately nearly all were damaged, and most of them I let go again. *Stilbia anomala*, only one (at light); *Noctua glareosa*, *Anchocelis lunosa*, *Luperina testacea*, in all shades of gray and brown, were numerous.

Ivy, during October and up to the end of November, was very attractive, my captures including *Miselia oxyacanthæ*, *Calocampa retusta* and *C. exoleta*, *Orthosia lota* and *O. macilentata*, *Cerastis vaccinii*, *Anchocelis pistacina*, *Xanthia circellaris* (*ferruginea*), *Xylina socia* (*petrificata*), *Cidaria siterata* (*psittacata*) and *C. miata*, and *Thera variata*.

Sugar, throughout the entire season, was an absolute failure; such species as *Noctua dahlii*, *Hadena contigua*, *H. thalassina*, *H. adusta*, *Triphæna fibrosa*, *Xylophasia sublustris*, abundant in 1884, were not seen; and even *Thyatira batis* and *X. monoglypha* (*polyodon*) refused to be tempted. Probably the dry summer, and the unusual number of Aphides causing every leaf to be sticky with honeydew, may explain these anomalies.

Cullemamore, Sligo, January, 1886.

TORTRICES TAKEN NEAR CAMBRIDGE.

BY WILLIAM FARREN.

THE following is a list of the Tortrices which my son and I captured during 1885 around Cambridge and in Wicken Fen. I am afraid it is very scant, especially in specimens; but the reason is, I think, the same as referred to (Entom. 78) in the list of the Tinea,—the prevailing strong and cold east winds, which lasted nearly all summer.

Tortrix podana, flying at dusk in the fen, and beaten from mixed hedges; one quite a pigmy. *T. rosana*, abundant in hedges. *T. dunetana*, a fine series flying at sundown; looks like a *Tortrix* of half the size, and very light, owing to its pale under wings, which show plainly in the dim twilight; comes to light directly the lamps are lit; has a peculiar zigzag movement as it runs up the side of the net; solitary specimens were bred from buckthorn, the low creeping bramble of the fen, and yellow loosestrife; is confined strictly to Wicken Fen. *T. heparana* and *T. ribeana*, commonly bred and beaten out, both in the fen and elsewhere. *T. unifasciana*, common in privet hedges. *T. costana*, bred from various fen plants, and abundant at light; some very dark vars. *T. palleana*,* a few only, flying with *T. viridana*, which is also rare in the fen; at four o'clock in the morning, near a scrubby little oak, about three feet high, in the middle of the fen. *T. forsterana*, two only in the fen.

Peronea variegana, common in whitethorn hedges, in fine variety. *P. hastiana*; there are two great broods of this in June and October, but they keep coming in the intermediate months; some sallow bushes are specially infested with this species, nearly every leaf being attacked; I have this in great variety, which I must get some old friend to name for me. *P. shepherdana*, bred in plenty from meadow-sweet heads; seldom seen on the wing, but comes freely to light.

Rhacodia caudana, beaten from sallows, but not common.

Teras contaminana, beaten in plenty from whitethorn, and in great variety; some brightly coloured and strongly marked, others dull leaden grey, with scarcely any markings.

Dictyopteryx lorquiniana (*uliginosana*, of my young days, when it was extremely rare); now bred in abundance from the flower-heads of *Lythrum salicaria* in October, and from shoots of the same plant found in June, but is scarce then and hard to find; this summer brood has the black spot on the fore wings, and used to be called the female, but both sexes have the

* Probably the yellow variety of *viridana*, known as *suttneriana*, Schiff., and not *palleana*, Hb. (= *icterana*, Fröl.).—R. S.

spot then ; and although I bred a very large series of the autumn brood, not one had the large black spot ; they are either quite plain or sprinkled with fine black dots ; a rare variety of this is streaked like some of the vars. of *Peronea hastiana*, and only occurs in the autumn brood ; comes to light in July. *D. læflingiana*, beaten from oak at Fulbourn. *D. holmiana*, common in hedgerows among brier ; also in the fen. *D. bergmanniana*, in plenty in the fen, and at Wicken. *D. forskaleana*, not common at Cambridge among maple.

Argyrotoxa conwayana, common amongst privet round Cambridge.

Ditula hartmanniana, rare in the fen. *D. semifasciana*, one only in the fen.

Penthina pruniana and *P. variegana*, bred and taken commonly from sloe and whitethorn. *P. ochroleucana*, used to be a plague to me in my rose-growing days, but I could not find one last year. *P. gentiana*, bred from teasle-heads, and specimens taken at "Flem Dyke" and Chippenham, where there is no teasle. What does it feed on there, or is it another, but closely-allied, species ? *P. fuligana (carbonana)*, bred a nice series from the old stems of *Stachys palustris* in the fen ; very rarely seen on the wing. Note.—Do not kill this with ammonia if you want to retain the beautiful purple-black gloss ; a good dose of tobacco-smoke will kill and retain the colour too.

Hedya ocellana, bred freely, and beaten from hawthorn. *H. aceriana*, a few from poplars. *H. dealbana*, one only in the fen. *H. servillana*, a solitary, but beautiful, specimen in the fen from fallow.

Spilonota trimaculana, abundant in hawthorn and rose. *S. roborana*, two or three only.

Pardia tripunctana, abundant from hawthorn.

Aspis udmanniana, a few from bramble in the fen.

Sericoris fuligana (abscisana), a series at light ; not seen at any other time. *S. lacunana*, very abundant in the fen ; three of the var. *herbana*. *S. alternana*, two only in the fen.

Euchromia purpurana, rare in the fen, flying at dusk, and at light directly we lit up.

Orthotania antiquana, a good series at light, came at all hours. *O. striana*, only saw one, and that at light. *O. ericetana*, one only.

Cnephasia musculana, rare among brambles

Sciaphila nubilana, common in hawthorn. *S. subjectana*, flying by day along hedgerows. *S. virgaureana*, common in the fen. *S. chrysanthæana*, one only in the fen. *S. hybridana*, abundant in hedgerows.

Sphaleroptera ictericana, common on the "Breck Sands" and at "Flem Dyke" ; the female rare.

Clepsis rusticana, my son caught one in the fen in May ; used to be common there.

Bactra lancecolana, abundant amongst rushes everywhere.

Phoxopteryx siculana, one in the fen. *P. biarcuana*, a few in the fen. *P. paludana*, a series in the fen, but was scarce last year; larvæ on *Lathyrus palustris* between united leaves, in September.

Grapholitha nigromaculana, not at all common on the fen banks, but I have seen it in swarms years ago. *G. subocellana*, two in the fen. *G. trimaculana*, in swarms in the elm hedges.

Hypermezia angustana, bred from willows in plenty; also at light, but rarely.

Batodes angustiorana, one only from fir.

Padisca oppressana, found sitting on aspen trunks; very local. *P. corticana*, not common in hedges. *P. semifuscana*, bred freely from willows in good variety; two with broad white dorsal streaks.

Ephippiphora pflugiana, bred from the red larvæ in dead thistle-stems. *E. inopiana*, rare in the fen at light. *E. nigricostana*, rare in hedgerows. *E. populana*, bred from dwarf willow, and taken from willow bushes; sits on the leaves in the sun in the afternoon.

Semasia ianthinana, rare in hedgerows. *S. wæberiana*, bred from apple-bark, and common on apple trees.

Retinia buoliana, bred from shoots of Scotch fir. *R. pinivorana*, beaten from Scotch firs.

Carpocapsa pomonella, bred from spun-up larvæ under apple-bark, and on trunks of apple.

Opadia funebrana, the larvæ were common last autumn in sloes, and various sorts of plums, especially damsons and cruxes; it remains to be seen whether we breed any.

Endopisa nigricana, a few flying just before dark on the borders of the fen.

Stigmonota orobana: this flies when the sun is setting, and seems quite merry for a few minutes in the low sun's rays, but scarcely a series were taken, as it and the light are so soon gone; none came to our lamp-light; Wicken Fen. There is a larva in the dead pods of *Lathyrus palustris* which we suspect is this species, but have not yet bred it. *S. compositella*, common in clover fields. *S. regiana*, one or two beaten out of an old mixed hedge; but I am told this is common at Ely on sycamore.

Dicrorampha politana, I found this common on a patch of ground only a few yards square, and nowhere else. *D. petiverella*, common on chalk lands amongst yarrow. *D. saturnana* and *D. acuminatana*, rare on the fen banks.

Pyrodes rheediella, not rare, flying in the sunshine along whitethorn hedges.

Catoptria ulicetana: where we can find a furze bush we find this, but have not much of either here. *C. hypericana*, bred from *Hypericum* shoots,

and not uncommon on the chalk. *C. parvulana*, two at "Flem Dyke," of what Mr. W. Warren says should be this. *C. cana*, at "Flem Dyke," not common. *C. fulvana*, two or three in the fen. *C. scopoliana*, common at "Flem Dyke." *C. expallidana*, rare, in the fen; comes to light about 10 to 11 o'clock, and is easily missed, as it at once sits on the glass of the lamps, and looks so like a common *Urambus*. *C. citrana*, not very uncommon on the "Breck Sands."

Symathis oxyacanthella, in swarms everywhere along hedges.

Eupacilia angustana, "Flem Dyke." *E. mussehliana*, six specimens in the fen, which Mr. H. T. Stainton refers to this species; with this I can hardly agree; the ground colour is silvery, not yellow ochreous, as in *E. mussehliana*, and is mottled with rich brown markings; the fascia is not placed at such an angle; the basal patch is larger and darker, and it has a netted appearance, owing to the light ground and sharp clear dark markings; Mr. W. Machin thinks it is new. *E. udana*, half a series, flies at dusk in the fen; varies much in size. *E. notulana*, a good series, and a few over for friends: flies at dusk, and is very conspicuous on the wing. *E. rupicola*, one only in the fen. *E. roseana*, had some larvæ in teasle-heads, but did not breed them. *E. ciliella*, only one or two on the fen banks.

Xanthosetia zoegana, came to light in the fen, but rare; one brown var. and one almost white; all small in size. *X. hamana*, common in the fields round the fen, and at light in the fen; some nice vars.

Chrosis alcella (*tesserana*), common at "Flem" and "Devil's" Dykes.

Argyrolepis hartmanniana, a few amongst some tall rank grass. *A. subbaumanniana*, common on the "Breck Sands" and at "Flem Dyke." *A. schreberiana*, on the trunks of wych elms in the fen district; extremely local. *A. badiana*, at light, and nothing in the twilight in the fen. *A. cnicana*, one or two came to light.

Conchylis francillana, one only in "Flem Dyke." *C. dilucidana*, three in same place. *C. straminea*, came freely to light in the fen; also brushed up by day.

14, King's Parade, Cambridge, April, 1886.

REARING THE TUSSEER SILKWORM.

BY CLAUDE JEAN DUMAINE.

DURING my stay in the Hazareebagh District of India, having at my disposal about quarter of a square mile of jungle close to my house, I resolved to experiment personally in the art of rearing the Tusser worm (*Antheræa paphia*, Linn.).

In the latter end of May I purchased seed cocoons, and,

guided by a practical man, picked out the ones containing female moths, as those containing males are useless. The cocoons containing female moths are, as a rule, larger, and the two extremities are pretty equal and much rounder at the end than those of the males; then again the safety cord, by which they are attached to the branches, is much thicker, and generally proceed from one side of the cocoons. The cocoons containing males are always smaller, and one of the extremities is more pointed than the other; the safety cord is thin, and generally starts from almost the top of the cocoon. The next step is to satisfy oneself that the chrysalis is alive, which can easily be found out, not only by the weight, but by the sound. The dead ones, when shaken, give a sharp rattling noise, and are also very light. I tested over and over again the accuracy of these statements, and found them to be correct. I then got green branches, made bows of them, and threaded the string through the loop of the safety cord; six to eight cocoons were put on each bow, and hooks made of green branches tied to the bows, so as to be able to fix them where needed. This is the primitive, but effective, native system by which the cocoons can be kept safely and out of harm's way.

About the 20th of June, when the rains had well set in, as customary, I hung these bows in my verandah and examined the cocoons. Generally at about sunset the head of the cocoons are moistened by the liquid secretion from the mouth of the insect; this is the sign the moth will soon come out. After candle-light, from 7 to 8 p.m., the moths come out, and cling to the sides of their respective cocoons. It takes them about half an hour to settle and stretch their wings, when the males only fly away, and not being needed are allowed to do so. At 8 p.m. I had all these bows taken out and suspended to a string stretched in the open air across my compound, about six yards from my house, so that the females could, while clinging to the side of their cocoons, be visited by the wild males. The native way is to hang the bows under the trees, the advantage of which is that they are better protected from the attack of the night birds than when on the string; but on the other side run great risks of being destroyed by ants and rats, and often are found neglected by the males in consequence of their seclusion. To remedy the only defect there is in my method, I used to keep men on the watch; a great expense,

unless you have a large quantity of moths. To satisfy myself that it is a mistaken supposition, on the part of natives, that the escaped male moths never returned to the place, I had several distinctive marks made on the males that emerged from my cocoons in the evening before they had time to fly away, and found that they returned not only the next morning, but many following ones. At 3 to 4 a.m., as customary, I used to go and examine my female moths, and satisfy myself that each female had a male; and for those that had none, wild males were caught. It is a well-established fact that a female moth that has not been visited by the male the day she comes out from the cocoon, before dawn, will never be approached by one again; so that female is a loss to the person rearing it. I was no little astonished, when I visited my moths in the morning, to find a great number of spare male moths flying round and round the females; in fact they were troublesome; but the minute daylight is seen they all vanish.

At this period, as usual, I had all these bows taken into my house and suspended in a room, keeping them away from the wall, as protection against ants and rats. The females and males remained together the whole day till sunset, that is, about twenty-four hours from the time they emerged from the cocoons. The males then leave the females and fly away, which they are allowed to do. The females, if not immediately secured by clipping the wings, will fly away also.

The female moths are then put in places where the eggs are to be laid. The native methods are to put two or three in each *pouche*, made of *sabay* grass, measuring about eighteen inches in length by six inches in diameter, closed at both ends, the lower part rounded and the top pointed, the straws being about quarter of an inch apart. The advantages of these pouches are that the moths are well secured, and they save much trouble in looking after the eggs. When the time of hatching comes the pouches are simply attached to the trees where they are to be reared, and the "worms" do not run any risk of being drowned or eggs spoiled, if, as often takes place, a shower of rain should come before the eggs are hatched or the "worms" have all left it. On the other side the loss of eggs must be great, as they are often laid just between two straws, or washed off by the rain; but the natives do not seem to care much for such losses.

My method was to put the females into a box previously lined with paper, the top part being open. I treated them in three different manners. In the first box, measuring inwardly about $18 \times 15 \times 6$ inches, I put six females; I left these moths undisturbed till they died on the fifth day, after laying their eggs at pleasure. The result was that the eggs produced about one-third of good strong worms, then about half of the remainder gave most weak and sickly ones; and out of what was left many eggs never hatched, and a number of worms were hardly able to creep out of the eggs, and died. In the second box I doubled the number of females, which were still far from being crowded. I took up the eggs which were laid the first twenty-four hours, and every worm hatched; some, however, being sickly. This proved to me clearly that the sooner the eggs were laid the better; my guide had also told me so, and the following is the method I employed. It is well known that, when laying, the moths spin round and round, flapping their wings all the time, and when at a standstill they can be forced to renew the spinning round and round and laying, by simply touching them with the finger. The third box I purposely overcrowded with moths, calculating that amongst such a number there would at least be a few that would always be laying, and when doing so they would touch the adjoining moths, which would commence spinning afresh, and naturally cause the undisturbed ones to do the same, so that all the eggs would be laid within a short time, which is most desirable.

Next morning, that is twelve hours after, I removed these moths into another box, which we will call No. 4, and allowed them to remain unmolested for twelve hours more, keeping those eggs separately; and then again removed them to another one, which we will call No. 5. The eggs which were laid in box No. 3 gave good worms, and all hatched. In No. 4 box there were hardly any eggs, which gave indifferent kind of caterpillars. In box No. 5 there were but few eggs; many, as usual, did not hatch at all; others were not worth keeping. In experiment No. 3 the moths died in three days, while in Nos. 1 and 2 box they lived up to five days. Each female lays from 350 to 400 eggs.

Before going any further I shall describe how the field covered with trees, on which the worms feed, is prepared in the

usual manner:—1st, all useless trees and brushwood are cut down; 2nd, all the lower branches of the useful trees are also cut to about three feet from the ground, as well as those branches which touch adjoining trees; 3rd, the trunk of the trees must be well exposed; 4th, all dried leaves and grass are removed;—in fact the place is made as clean as any garden, so that the man in charge can at a glance see the worms are not molested. The only trees I tried to rear my worms on were *Shorea robusta* (*sal, sakooa*) and *Terminalia tomentosa* (*assun*); in fact these are the principal ones used for that purpose.

The eggs having been laid in boxes, I detached them with an ivory paper-slice, and kept them in boxes till the evening of the eighth day. I then had pouches made of green leaves, taking the precaution of making two or three small holes in the lower part, so as to allow the water to run out should a shower come on. The first time I did it I made no holes, and the natural result was that all my worms were drowned and eggs spoiled. This leaf-bag or pouch I attached to the trees, where the worms were to be reared, on the evening of the eighth day. On the morning of the ninth day the eggs hatched, and the trees were at once covered with small caterpillars, about three-sixteenths of an inch long, and one thirty-second part of an inch broad; they were rather hairy, and of a dark colour. The natives attach the pouches to the lower branches of the trees, so that the worms go upwards; and when they have eaten up all the leaves, they being on the top of the trees, the keeper has to climb up and hold fresh branches with leaves where the starving worms are, keeping it there till the worms are on them, and then hand it to another man, who ties it to adjoining trees. This operation is risky, troublesome, and expensive, and many hands are needed.

My method was the same, so far as removing the worm from one tree to another; but the day the eggs were hatched I attached the pouch to the tops of the trees, where young worms not only had the tender leaves to feed upon, but, when they had done eating the leaves, they had arrived at the lower branches within easy reach of the keeper, who without any risk removed them as above described, one man being able to do as much as ten by the native method. The worms feed two days and a half and rest or starve a day and a half, and before commencing to feed again they fix their skin to the branch and crawl out of it, which skin they

devour and then take to the leaves. This they continue for forty-five days, and at each operation the worms get not only larger but change colour, till bright spots of silver and gold glitter in the sun. The morning of the forty-sixth day the creature spins its cocoon, which takes it two and a half to three days. The cocoons containing females are kept for seed, the male ones are put in hot water to destroy the vitality of the chrysalis, and then kept for sale. They remain in their cocoons for fifteen days, when the whole process above detailed must be done over again; but when they spin a second and last time for the season, the cocoons are allowed to remain on the trees three to four days to get seasoned, as the harder they are the better, when they are collected and sold to merchants. From the day the moths come out of the cocoons for the first time, to the time they are collected off the trees for sale at the end of the second and last crop for that year, there is a lapse of 134 days. The revenue paid to the "zemindar" for the use of the trees varies from Rs. 3 to Rs. 4 per keeper, who can have two or three boys to help him.

The cocoons reared on the *Terminalia tomentosa* (assun) are the largest. Those from the *Shorea robusta* (sal) are smaller but harder, and said to contain more silk. Those found on the *Zizyphus jujuba* are still smaller and harder, and said to contain as much silk as any, but this I cannot vouch for, as I had no opportunity to satisfy myself on the subject.

Before ending I must state that it is a known fact that the silkworms have enemies ready to eat or destroy them from the time the moth comes out from the cocoon, and even when in it in its wild state. While the moth is still hanging to the cocoon from which it has just issued, the night birds, bats, flying foxes and rats attack them, as well as ants. When in the eggs ants make short work of them, and in fact at all times. When they turn into worms they are attacked day and night by birds of all kinds, carried away by rats, snakes, Spanish flies, and wasps and other insects sting them to death. There is a kind of insect which has a long proboscis which it fixes in the worm and literally sucks up all the inside. On one occasion, having nothing wherewith to catch it, I tried to kill it by pressing it between two leaves; I was stung in the top of the middle finger, and before I had time to drop it, I felt the pain right up to my shoulder.

This insect destroys worms by hundreds, as it often only takes a taste out of each worm it comes across. The snakes make short work of them, and if they happen to fall off the branches toads eat them also. Ants of all kinds, as I have already said, never let them escape when they have an opportunity. When they have spun their cocoons and are hanging to the branches in their wild state, there is a bird with a strong parrot-shaped beak which cuts the cocoons and eats the chrysalis. The number of eggs that are hatched must be very great, in order, after the inroads made by so many different kinds of enemies that swarm in the jungles, to still leave the millions of millions of cocoons which are sold for the silk trade.

I will now give a short account of the various beliefs or superstitions of the natives who rear the worms. They must make new cots or "charpoys" to sleep upon, their old ones being considered unclean. When once the eggs are hatched they must never leave the areas covered by the trees on which the worms are to be reared. They must not see their wives. No woman nor girl must enter the spot chosen by them in the jungles. They must bathe twice a day. Must never shave or cut their hair. Their meals must be taken to them by some boy or man, and must be placed just on the border of their cultivation, where they will eat and leave the plate to be taken away by whoever brought it. Cattle of all kinds must not trespass on the chosen spot. They must not wear shoes. They must not eat fish. These are some of the laws laid down by their ancestors, and they strongly believe that if they break through any of these rules their punishment will be the total loss of their crop. As a reward, they have been given the hope that they will, after many years, by acting as told and persevering in the trade, find that some of their cocoons have turned into lumps of gold. I have in vain tried to argue with them and open their eyes, by explaining that the person who made these rules knew full well the worms required their presence day and night, and to compel them to be always in attendance laid the above rules, which have the desired effect; and as for the hope of getting the golden cocoons, it was but a figurative way of telling them that continual attention to their work, and perseverance in spite of all losses they may have during the years of short rainfall, they will at the end get a small fortune. But all my arguments went for nothing.

List of trees (with botanical and local names) found in the Hazareebagh Jungles on which silkworms can be reared or are found in their wild state:—1, *Terminalia tomentosa* (assun); 2, *Shorea robusta* (sal); 3, *Terminalia belerica* (baheera); 4, *T. chebula* (harra); 5, *Buchanania latifolia* (piar); 6, *Ficus infectoria* (pakur); 7, *F. religiosa* (peepul); 8, *F. glomerata* (goolur); 9, *F. bengalensis* (bur); 10, *Bombax malabaricum* (seemul); 11, *Carrissa carandas* (karrunda); 12, *Bassia latifolia* (mowha); 13, *Anogeissus latifolia* (dhorn dhonta); 14, *Schleichera trijuga* (kussum); 15, *Zizyphus jujuba* (bair); 16, *Terminalia arjuna* (arjoon); 17, *T. catappa* (baddam); 18, *Symplocos racemosa* (lodh); 19, *Artocarpus integrifolia* (kantai); 20, *Anthocephalus cadamba* (kadam); 21, *Gmelina arborea* (gamar); 22, *Dillenia indica* (chalta); 23, *Lagerstromia parviflora* (séd or sedah).

I have no doubt that there are great many more on which the Tusser could be reared, as well as other wild silk-spinners, such as the *Attacus atlas* and other kinds of *Antheræa*. But in the Hazareebagh district and adjoining ones the only one reared is the Tusser, and the principal food is *Terminalia tomentosa* (assun), probably because it is more plentiful; as the tree gives but a second-class wood for building, the natives do not care to cut it, as they do the *Shorea robusta* (sal) on which the worms also feed.

The rule, so far as I can see, is, the less you have to take the worms from tree to tree the better, you must never touch the worms with the fingers, and the deeper is the jungle the larger and harder are the cocoons, so one must go into jungles far away from large towns to rear them profitably.

I resided for fifteen years at Burhee, in the Hazareebagh district, and made the silk culture in open air a pleasant pastime and study. I visited the adjoining districts of Singbhoom, Manbbhoom Lohardugga, Palamow, and spent six months at Soorjoogah, passing by Mirzapore, Singrowlee and Rewah districts; in all these places the Tusser cocoons abound, and I have not the slightest doubt that a very profitable business could be carried on by renting at a nominal cost the vast tracts of jungles, and engaging a suitable number of men to carry on a large rearing establishment. The great advantage one has is that in making use of the jungle, one has no expense in cultivating trees; the worms have also abundance of fresh leaves to feed

upon, which is not the case in rearing the ordinary *Bombyx*, for whom quantities of land must be planted with mulberry trees, and kept up at an enormous cost and risk, as well as other well-known drawbacks.

Very large quantities, say the entire crops of several districts, could be secured by making arrangements with the breeders. It is a known fact that every year "jungles" are compelled to abandon the trade simply from want of money, having to wait five months to realize the value of their crops. I shall be glad to give any further information on the subject of rearing the worms.

Chandernagore, March 8, 1885.

NOTES ON LEPIDOPTERA IN DORSETSHIRE.

BY E. R. BANKES.

AMONG many rare and local species of Lepidoptera, which have been captured during the last four or five years by the Rev. C. R. Digby and myself on the South Dorset coast (which, it must be remembered, includes the so-called Isle of Portland), the following are the most noticeable:—

Sphinx convolvuli, *Sesia ichneumoniformis*, swept from flowers of *Lotus corniculatus*; *Nudaria senex*, *Lithosia sororcula* (*aureola*), *L. griseola* var. *flava* (*stramineola*), excessively local, though common where it occurs; *Gnophria quadra*, *Emydia cribrum*, flying on the heath towards dusk; *Dasychira fascelina*, *Bombyx trifolii*, bred from larvæ on grass; *Notodonta dictæoides* (one larva on a birch tree), *Bryophila muralis* (*glandifera*), *Leucania littoralis*, of which the larvæ can only be obtained at night, as they lie buried deeply beneath the sand by day; *L. impudens* (*pudorina*), *Cænobia rufa* (*despecta*), *Heliophobus hispidus*, *Grammesia trigrammica* (*trilinea*) var. *bilinea*, *Agrotis lunigera*, *A. ripæ*, *A. præcox*, *A. simulans* (*pyrophila*), *Triphæna orbona* (*subsequa*), *Dasyampa rubiginea*, at ivy bloom; *Epunda lichenia*, *Aporophila nigra*, at sugar; *Cucullia asteris* (the larvæ on China asters), *C. absinthii*, *Heliothis peltigera*, bred from a larva on *Ononis arvensis*; *Hydrelia uncula* (*unca*), *Thalpochares ostrina* (Entom. xiii. 282), *Aventia flexula*, chiefly at light; *Hyphenodes costæstrigalis*, *Tholomiges turfosalis*, *Eurymene dolobraria*, *Boarmia repandata* var. *conversaria*, *Geometra vernaria*, *Zonosoma orbicularia*, among willows; *Acidalia rusticata* (a few taken annually amongst

Parietaria officinalis (Has it ever been known to feed on this plant?), *A. straminata*, *A. emutaria*, *A. degeneraria*, *Macaria alternata*, at light; *M. notata*, *Selidosema ericetaria* (*plumaria*), *Larentia olivata*, *Eupithecia constrictata*, beaten from thorn and bramble brakes, growing where wild thyme is plentiful; *E. coronata*, *Lobophora sexalisata* (*sexalata*), *L. viretata*, *L. carpinata* (*lobulata*), *Camptogramma fluviana* (one specimen at light), and *Phibalapteryx vittata* (*lignata*).

The Pyralides have turned up in good force, and are well represented by such local things as—*Scoparia lineolea*, on ash trunks and lichen-covered stone walls; *S. mercurella* var. *portlandica* (wrongly called *phæoleuca* in our lists), *S. resinea*, on lichen, on ash, and apple trees; *S. pallida*, *Odontia dentalis*, *Endotricha flammealis*, abundant, but very local; *Botys flavalis*, *B. asinalis*, amongst madder; *Ebulea verbascalis*, *E. stachydalis*, amongst *Stachys sylvatica*, on which the larva is common, though decidedly local; *Diasemia literata* (*literalis*), and *Stenia punctalis* (the larvæ live under stones in spring, and feed on grass-stems, dead leaves, &c.).

The Pterophori met with in the district show a good proportion of the British species, and include—*Amblyptilia cosmodyctyla* (*punctidactylus*), reared from larvæ feeding on flowers and unripe seeds of *Stachys sylvatica*; *Oxyptilus teucarii*, amongst *Teucrium scorodonia*; *O. parvidactylus*, *Mimæscoptilus phæodactylus*, *M. zophodactylus* (larvæ in seed-heads of *Erythræa centaurium*), *Leioptilus microdactylus*, *Acipitilia baliodactyla*, and *A. tetradactyla*. It is perhaps worth mentioning that in the end of June, 1884, I bred an imago of this last species from a larva found shortly before on wild thyme.

Among the Crambi we have been favoured with a fair share of "good things," our chief captures being—*Crambus sylvellus* (*adipellus*), *C. uliginosellus*, *C. latistrius*, *C. warringtonellus* (very local), *C. selasellus*, *Anerastia lotella*, *Ilithyia semirubella* (*carnella*), *Homæosoma sinuella* (larvæ in root-stocks of *Plantago lanceolata*), *H. binævella*, *Euzophera cinerosella* (larvæ in stems of *Artemisia absinthium*), *Cryptoblates bistrigella*, *Phycis fusca* (*carbonariella*), flying in the evening amongst burnt furze; *Diorctria abietella*, taken far away from any fir trees; *Nephoteryx genistella*, bred from larvæ and pupæ in thick webs in gorse bushes, but its range is unfortunately very restricted, owing to the constant cutting and burning of the gorse; *Rhodophæa marmorea*, among sloe bushes; *R. suarella*, together with *Oncocera ahenella*.

Of the Tortrices the most aristocratic species which have fallen victims to our efforts are—*Cnectra pilleriana* (the ordinary brown form); we have met with a very handsome local variety outside the county, of which the fore wings of the male are glossy reddish ochreous, with ferruginous markings, while those of the female are unicolorous glossy dark ferruginous;

the larva on *Statice limonium*), *Peronea caledoniana*, amongst *Myrica gale*; *Penthina sellana*, on the downs; *P. marginana*, flying over marshes at dusk; *Sericoris littoralis* (*littorana*), amongst *Statice armeria*, on which the larva is found in April; *Euchromia purpurana*, *Orthotania antiquana*, *O. ericetana*, *Phtheochroa rugosana*, *Phoxopteryx diminutana*, among willows; *Phlæodes immundana*, *Ephippiphora nigricostana*, *E. populana*, *Coccyx vacciniana*, *Stigmonota leplastrierana*, amongst wild cabbage, from which plant it has also been bred; *Catoptria expallidana*, *C. pupillana*, amongst wormwood; *Eupæcilia atricapitana*, *E. hybridella*, *E. ambiguella*, of which the curious cocoons are found attached to stems of *Rhamnus frangula*; *E. udana*, at light; *E. rupicola*, *Xanthosetia zoegana* var. *ferrugana*, *Argyrolepis subbaumanniana*, *A. zephyrana*, *A. cnicana*, and *Conchylis straminea*.

In that interesting group, the Tinæ, many noticeable species have occurred, amongst them being *Psyche villosella* (the cases are usually common on the heaths, though they nearly all produce females), *Psychoides verhuellella*, bred from seed-fronds of *Asplenium ruta-muraria*; *Xysmatodoma argentimaculella*, of which the larvæ occur in silken tubes on lichens on turf banks, as well as in their usual situation on rocks; *Tinea albipunctella*, *T. nigripunctella*, *T. semifulvella*, *Harpitperyx scabrella*, *Depressaria rotundella* (larvæ on *Daucus carota*), *D. badiella* (larvæ on the radical leaves of *Hypochaeris radicata*), *Brachmia mouffetella*, *Bryotropha mundella*, *Lita costella*, of which three broods have been observed; *L. obsoletella*, *L. ocellatella* (larvæ on *Beta maritima* and on *Atriplex portulacoides*), *L. plantaginella*, bred from *Plantago coronopus*; *L. atriplicella*, *Recurvaria nanella*, *Apodia bifractella*, *Ptocheuusa inopella* (excessively local), *P. subocellea*, *Doryphora oblitella*, crawling up grass-stems in a swampy field at sunset; *Cladodes geronella*, *Hypsilophus schmidiellus* (*durhamellus*), *Ecophora lambdella*, beaten from dead furze, and also from dead bramble far away from any furze; *Æcogenia quadripunctata* (*kindermanniella*), amongst *Parietaria muralis*, in the dead stems of which plant the larvæ have been found feeding in April; *Butalis variella* (the larvæ are found in spring below the sand in long silken galleries attached to half-buried stems of *Erica cinerea*, upon which they feed), *Amphisbatis incongruella*, flying on the heaths; *Zelleria hepariella*, *Gracilaria semifascia*, *G. phasianipennella* (the cones on *Rumex acetosella*), *Coriscium cuculipennellum*, bred from cones on privet; *C. citrinella*; *Coleophora melilotella* (larvæ and imagines common amongst *Melilotus*), *C. ahenella* (the cases on stems of *Rhamnus frangula*), *C. potentillæ*, *C. ochrea*, *C. obtusella* (cases on seed-heads of *Juncus maritimus*), *C. juncicolella*, *C. flavaginella*, Lienig; *C. salinella*, bred from larvæ feeding in October on *Atriplex portulacoides*; *C. conyzæ*, *Chauliodus insecurellus* (bred last summer from larvæ on *Thesium humifusum*, on which plant Mr. W. H. B. Fletcher had discovered the

larva in the spring; two broods have been observed, in May and in July, and I expect there is probably a third in September; but, as far as my own experience goes, the species is terribly subject to the attacks of ichneumon, *C. daucellus*, of which there are three broods, as, from larvæ found at large on *Daucus carota*, I have bred imagines in May, July, and September; *Elachista perplexella*, bred from *Aira cæspitosa*; *E. subalbida* (*subochreella*), *Cemiostoma lotella*, bred plentifully from *Lotus major*, growing in bogs; *Opostega salaciella*, and—last as well as least—*Nepticula cryptella*, amongst *Lotus corniculatus*.

Of the above-mentioned species a certain number are new to the Dorset list; while *Coleophora flavaginella*, Lienig, of which the larvæ were found on *Sueda maritima* in October, 1884, by the Rev. C. R. Digby, with whom I was collecting at the time, had not previously been met with in Britain. He informs me that Mr. W. H. B. Fletcher found larvæ of this species on the south coast in the same year, but failed to rear them; though last year he took both larvæ and imagines.

The larvæ which I procured on that occasion hibernated when full-fed, and I succeeded in breeding the imago for the first time in June and July, 1885. It is necessary to add that there has been considerable difficulty in identifying this insect. It is certainly not *C. flavaginella*, Mühlig (*vide* E. M. M., xxii., pp. 135–137); and though it must stand for the present as *C. flavaginella*, Lienig, it seems not improbable that it is really distinct from Madame Lienig's species, and may prove new to science.

It may be of interest to mention, by the way, that in the spring of last year I was fortunate in taking a few *Eupithecia irriguata* in the northern part of the county, and have now pupæ resulting from a batch of ova laid by a female.

The above random notes on some of the most interesting species met with by two entomologists within the limits of this county alone, during the bad seasons lately experienced, will show that, in spite of its small size, Dorsetshire can boast of a lepidopterous fauna which would do credit to many a county of larger area.

The Rectory, Corfe Castle, March 31, 1886.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

LYCÆNA ARGIOLOUS.—I am as much surprised as Mr. Harwood (Entom. 88) to learn that Mr. Harcourt Bath and Mr. J. Jenner Weir are under the impression that *Lycæna argiolus* is not double-brooded in the New Forest. The following records of my capture of specimens of the second brood of this species, in the New Forest, are extracted from my diaries for the years 1866, 1868, 1869, 1870, and 1874:—"1866, July 18th, one female. 1868, July 2nd, one male; July 17th, one female; July 22nd, one male; July 23rd, one male. 1869, July 15th, one male. 1870, July 12th, one female. 1874, August 3rd, two females." The capture of only nine specimens in five years certainly tends to confirm Mr. Harwood's opinion, that the second brood of this species is partial. I have also taken specimens of the second brood in Kent, Sussex, and Monmouthshire; but always sparingly. My experience of the first brood of *L. argiolus* is confined to May, 1882, during the first half of which month I found both sexes, in profusion, in the neighbourhood of Niton, and elsewhere in the Undercliff, Isle of Wight.—H. Goss; Surbiton Hill, Surrey, April, 1886.

LYCÆNA ARGIOLOUS IN THE NEW FOREST.—I find from my diary that in the year 1858 I took *Lycæna argiolus* in the New Forest in August as well as in May. I found but few of the latter brood, which might be accounted for by heavy rains, which lasted until the 18th of August. In the autumns of 1859, 1861, 1862, I also captured second broods. In the latter year, which was the last time I visited the Forest, there was plenty of ivy. I captured on October 23rd, 1858, at ivy-bloom, four *Dasycampa rubiginea*, two *Xylina socia* (*petrificata*), *Agrotis saucia*, *Epunda nigra*, *Hoporina croceago*, &c., in the New Forest.—WILLIAM FARREN; 14, King's Parade, Cambridge, April, 1886.

LYCÆNA ARGIOLOUS.—Much has lately appeared in the 'Entomologist concerning this, the most delicate and elegant, if not the most brilliant, butterfly of the genus *Lycæna* found in England, and much, doubtless, remains unrecorded which would throw additional light on its habits, both in the larval and imago states. My experience of this interesting little blue in the neighbourhood of Colchester, from 1872 to 1882, is to a great

extent corroborative, *viz.*, that it is undoubtedly double-brooded, as observed by Mr. Harwood (Entom. 88); but I do not remember having seen a single specimen there since the latter year. I have taken it flitting along holly hedges in May and August, and netted many fine specimens of the May brood hovering over or settling upon the flowers of old holly trees on Donyland Heath and adjoining wood near Colechester. I have also taken examples of this butterfly flitting along hawthorn hedges, and occasionally settled on gooseberry bushes (*Ribes grossularia*) in my garden, apparently only tending to prove that in those localities where the insect is periodically plentiful, it occasionally wanders from its staple food to sip the sweets of the blossom of other berry-bearing shrubs and trees. I notice that Stainton and other authors mention the flowers of the buckthorn, as well as those of the holly and ivy, as food of the larva of *Lycæna argiolus*.—GEORGE J. GRAPES; 2, Buckleigh Road, Streatham Common, S.W., 14th April, 1886.

LYCÆNA ARGIOLUS IN NORTH KENT.—It is within my observation that about this district *Lycæna argiolus* has been much scarcer for some years past. Brother collectors I have worked with in bygone years always accounted this species double-brooded. There were certainly two distinct flights; but the first was, or appeared to be, far inferior in numbers to the second. We imagined the reason was because the winter was passed in pupation, and many died some years owing to the damp affecting them. The tendency the May brood showed to haunt the buckthorn hedges was certainly a fair indication that they deposited eggs on the flowers of *Rhamnus*; and the August insects appeared as partial to bramble, or later to the ivy bloom.—J. R. S. CLIFFORD; Gravesend, March, 1886.

RESTING HABIT OF VANESSA ATALANTA.—I should like to say a few words with regard to the resting habit of *Vanessa atalanta* (Entom. 60). I think the whole family of Vanessidæ have a habit of resting in some very odd places at times which have no apparent attraction at all. I have often noticed *V. atalanta*, flying along the sunny side of old cinder walls, frequently resting itself on the bare cinders, or on the crumbling mortar which had been loosened by long exposure to weather. I watched one specimen on one occasion for half an hour or so: it traversed the wall backwards and forwards a good number of times, resting

every few yards, opening and closing its wings with as much enjoyment as if it had been at rest on some expanded flower. Like its relatives, *Vanessa urticæ* and *V. cardui*, it is very fond of resting in the middle of roads, or on bare and barren patches of land, or on rubbish heaps, and bare stones along the roadsides. It is also very fond of flying along the sides of stinking ditches and brooks; and in these parts this is a sure locality, if nettles grow there, to find, at the right season, the larvæ. Now in this Black Country of ours I have seen *V. urticæ*, *V. cardui*, and *V. atalanta* flying and disporting themselves among the old cinder mounds, which are so numerous, where scarcely a vestige of herbage or a flower is to be found. They may be seen frequently resting on the bare stones that lie scattered around, and where there is no attraction that one could perceive, the place being so barren as to make one wonder why butterflies should be found there at all.—T. HILL; 15, Russell Street, Willenhall, March 6, 1886.

CÆNONYMPHA TYPHON IN NORTH WALES.—Does *Cænonympha typhon* (*davus*) occur in North Wales? In Morris's 'Butterflies' a locality is given between Bala and Festiniog. I was in that neighbourhood upon several occasions at the end of last June, but failed to find *typhon*. The place is, however, so precisely similar to those where I have taken this butterfly freely in Scotland that I think it must occur. Perhaps some of your readers will be able to confirm Morris's locality. Welsh specimens of this insect would, I imagine, be the variety *rothliebi*.—W. J. KERR; Tan-y-Bwlch, North Wales, April 5, 1886.

DIMINUTIVE DIURNI.—Referring to the small *Lycæna icarus* (Entom. 63), I have a specimen of *L. corydon*, male, which only measures an inch, and one *L. minima* (*alsus*) of $8\frac{1}{2}$ lines.—DOVER EDGELL; Firle, Lewes, March 1, 1886.

LARVA OF CHÆROCAMPA CELERIO IN SUSSEX.—The larva of *Chærocampa celerio* has occurred in this neighbourhood. It puzzled me until I obtained Westwood and Humphrey's admirable book, when I at once recognised it. In size it equalled a full-fed *Sphinx ligustri*, and the cat-like appearance of the head when at rest was very formidable. It ate small willow-herb, fuchsia, and white bedstraw. I obtained it on the 23rd September, 1885; it spun up on 4th October, but did not moult until 4th November. I regret to say that from, I fear, the closeness of the atmosphere, in the place where they were confined, both it and eight larvæ of

S. ligustri have since died. The larva in question died six days after moulting (I could see all its motions, as it spun up against the glass in an ordinary breeding-cage), and exuded a brown fluid from the head. I fear it perished from over attention, as the *S. ligustri* in a more open space did very well. Has anyone noticed the lateness of some larvæ last year? I found *S. ligustri* on October 5th and another on October 27th on privet hedges.—DOVER EDGELL; Firle, Lewes.

ACHERONTIA ATROPOS.—On the 2nd day of September last year I had a larva of *A. atropos* brought me. I placed it in a breeding-case with about two inches depth of earth. It burrowed in about four days. After about a week I put the case near a stove on some pipes heated with hot water, keeping the earth moist. It remained there until the 29th day of November, on which day a small but perfect specimen emerged.—A. DRUITT; Christchurch, Hants. [The pupæ of *A. atropos* are seldom lost if forced forward in the autumn by gentle and moist heat, and usually produce average-sized moths.—ED.]

HABITS OF ACHERONTIA ATROPOS.—In reply to Mr. Jefferys' question as to the rearing of *A. atropos* (Entom. 64), I may say that last autumn, as well as previously, I have had some experience with the larvæ. In a state of nature, I believe the moths always emerge in the autumn, but when the pupa is kept under artificial conditions the moth often appears in early spring. From observations among my friends, I find that only about one moth in ten emerges, and they all complain of the difficulty of rearing them. Under natural circumstances the caterpillar spins a cocoon in the soil, which protects the pupa from irritation and dryness. I find the best way is to allow the caterpillar to burrow naturally in the garden or some convenient place, and then to put a vessel or netting over it. The great desideratum is to keep the atmosphere moist. I have sometimes found putting the pupa in bran or fine sawdust answer well, but the best method of all is that applied in the garden.—HERBERT E. NORRIS; St. Ives, Hunts, March 19, 1886.

FORCING PUPE OF ACHERONTIA ATROPOS.—For many years I have occasionally tried to rear *A. atropos* from larva or pupa, and have always failed until this year. The larvæ were unusually common in this neighbourhood last autumn, one friend telling

me that he had secured between twenty and thirty in one potato field. I had myself eight pupæ chiefly found by potato-diggers. From several friends I had directions for forcing these, and I resolved to try the following method. I half filled a 12-inch pot with sand, on which I placed a layer of moss, and on this the pupæ, covering these with another layer, sprinkling it with tepid water. I placed over all a bell glass, and put the pot into a soup plate, which I kept constantly filled up with water, and placed the whole at a short distance from a sitting-room fire, so as to be *warm*, not hot, occasionally turning the heated side away from the fire. I began the treatment the last week in October; on December 19th a moth emerged at night. I did not discover it until next morning, when I found it "crippled," not having power to cling to the sticks I had provided, and properly expand its wings. I then put into the pot, under the bell glass, an expanding trellis-work of wood, such as is sold to ornament pots of plants for the table. This I subsequently found to answer admirably. On January 7th another imago emerged, whose wings did not expand at all. February 1st, a good and perfect specimen appeared. March 14th, one died when about to change, and another emerged but did not get free from a part of the pupa case, which spoiled one wing. March 21st, the last came out good and perfect. I should add that the fire went out, as usual, at night, and the pot, of course, became cold; could I have kept the pupæ in a continuous heat, as in a hot-house, doubtless I should not have had to persevere in the treatment so long. Of the eight pupæ, then, two only produced perfect moths fit for a cabinet, two more would have been so but for preventable accident, one died just before emergence, and the remaining three were doubtless injured before they came into my possession, and died soon after. I may add that all, with one exception, turned on their backs before emerging, and all came out at nearly the same time—between nine and ten at night. There may be nothing new in the above notes; but yet there are some among your readers who may be glad of such a practical narrative. Your correspondent, Mr. Jefferys (*Entom.* 64), may gather from it some hints as to the rearing of one of our grandest nocturnal moths.—H. W. LIVETT; Wells, Somerset, March 22nd, 1886.

VARIETY OF *SMERINTHUS POPULI*.—It may interest the readers of the 'Entomologist' to know that I have a most curious variety

of *Smerinthus populi* just emerged from pupa. In shape and form it is the same as those usually seen, but the whole of the insect—wings, legs, thorax, and abdomen—is of a colour between brick-red and chocolate, suffused with a whitish bloom as on ripe fruit. There is the usual whitish spot on the fore wings, and also the crimson flush on the hindmost wings; with these exceptions there are no markings whatever. The nervures of the wings are bold and distinct, and the antennæ are white. The insect is a female, and the pupa came from Scarborough. Other pupæ from the same source have produced the usual type.—W. FINCH, jun.; 158, Arkwright Street, Nottingham, April 8th, 1886.

DEIOPEIA PULCHELLA IN SUFFOLK.—It may interest some of your readers to hear that whilst walking on a piece of rough land close to the edge of the cliff at Bawdsey, near Felixtowe, Suffolk, I disturbed a specimen of this extremely rare insect. As its flight was by no means rapid, I had little difficulty in securing it by the aid of my capital covering. This auspicious event occurred on May 25th, 1885. The specimen, which is in very fine condition, now reposes in a cabinet at Brentwood, and was exhibited last week at a meeting of the Saint Thomas's Society Field Club held in that town.—TERTIUS R. SANDERS; Bawdsey, Woodbridge, April 5, 1886.

LATE AUTUMN EMERGENCE OF ORGYIA ANTIQUA.—It is very probable that some of the late-feeding larvæ of the above do emerge in October or November (Entom. 40), whether the weather be mild or not, or else they die off, for this species never appears to hybernate as a pupa. The late Edward Newman pointed out the successional character of the emergence during spring and summer; so that while some moths are on the wing, caterpillars descended from early specimens are spinning up. In the hot summer of 1868, a number of examples I had of the kindred species, *O. gonostigma*, attained their maturity quickly, came out as moths in July, and their eggs hatching gave me an August brood of larvæ, and moths again in October. These also deposited eggs, but they proved abortive. Were it not for the capricious character of the English climate, doubtless both the species would be habitually double-brooded. They are so in many continental districts.—J. R. S. CLIFFORD; Gravesend, March 1, 1886.

VARIETY OF *TRIPHENA PRONUBA*.—On the 1st of July, 1885, I bred a curious variety of *Triphæna pronuba*, from a pupa belonging to my friend G. A. Harker, of Crosby. The anterior wings are of the ordinary dull reddish brown colour, but the left posterior wing, instead of being like the right one, which is of the usual bright yellow tint, is a silvery buff colour, with the band apparently dusted over with buff scales, which give it a very peculiar appearance. The body is lighter than the normal type.—F. N. PIERCE, 143, Smithdown Lane, Liverpool.

FOOD OF THE LARVA OF *POLIA FLAVICINCTA*.—Mr. H. Miller must not infer from having several times found the larvæ of *Polia flavicincta* feeding on flowers (Entom. 91) that such is always the habit of the species. The larva is not at all particular whether it feeds on flowers or leaves, nor very much on what plant. It is very abundant in this district, feeding at large, usually on dock and plantain; but in gardens, where it is equally plentiful, its food is most varied, for low plants in great variety seem equally to its taste, as are also frequently the leaves of the lower branches of some garden shrubs. Only last autumn I bred a beautiful series of dark specimens from larvæ found in my garden during the summer feeding on ivy leaves.—GEO. T. PORRITT; Huddersfield, April 6, 1866.

HELIOTHIS PELTIGERA AT MAIDENHEAD.—The various species of *Heliothis* are known to have a partiality for light, and I should not have been surprised at taking *H. peltigera* in this way, but that I believe it is a coast species, or, at any rate, does not occur very far inland. September 9th, 1885, was an exceptionally warm night, and, besides such other species as *Drepana binaria* (*hamula*), *Catocala nupta*, and *Eugonia alniaria* (*tiliaria*), I took a fine specimen of *Heliothis peltigera* at rest on the ironwork of a lamp-post in the Cockham Road, Maidenhead.—(Rev.) GILBERT H. RAYNOR; Shenfield, Brentwood, March 20, 1886.

CUCULLIA ARTEMISIE, *Hufn.*—In the last volume (Entom. xviii. 290) *Cucullia artemisiæ* is recorded as an addition to the British fauna. After certain investigations which I have since made, I am of opinion that before this species is admitted as British it will be desirable to have further and independent records of its capture in these Islands.—JOHN T. CARRINGTON; Savage Club, Savoy, W.C., April, 1886.

VARIATION IN THE GENUS *Scoparia*. — Whilst collecting in the neighbourhood of Deal, in the early part of July, on a beautiful day, when Micro-Lepidoptera were swarming and it was difficult for a comparative beginner at the study of the micros to determine what to take, I found a *Scoparia* flying rather freely, late in the afternoon. From their white appearance and the time of the season I at once concluded they were *S. ingrattella*, especially as I had taken *S. dubitalis* some three weeks before in the neighbourhood of Rochester, and knew that by that time the species must be over, or very worn, while the bulk of these were in fine condition. As I had been hard at work some hours I had but few boxes left, and consequently took home but few specimens. I noticed, however, flying among the others, two or three specimens apparently bleached, and thinking they were very wasted I did not take them. However, noticing one at rest, and remarking that it looked comparatively fresh, I boxed it, and on arriving home and looking over my captures was surprised to find a remarkably pure white *Scoparia*, whose species would, at least, have been exceedingly doubtful; however, taking the surroundings of the insect into account, I think it is more than probable that the insect is a white form of *S. ingrattella*. Showing the specimens to my friend Mr. Coverdale, some time after, and telling him where it was captured, he told me that he had one, taken the previous summer at the same place; but that, I believe, was the only one he saw. His, however, shows the markings, although very indistinctly, and seems a sort of connecting-link between mine and the type. From its general appearance I should say *Scoparia ingrattella* was only a form of *S. dubitalis*, but its constant appearance about three weeks later would make this questionable, unless the nearness of the sea to the coast districts where *S. ingrattella* occurs makes a difference in the time of its appearance. If this were to make a difference, I should think it should be in the opposite direction, and the coast specimens would occur, if anything, earlier. It is worthy of remark, I think, that some of the *Scopariæ* have a tendency to vary towards the two extremes, "white" and "black." *S. cembraë*, *S. ingrattella*, and *S. pallida* seem especially to lean towards pale forms; while *S. mercurella* is specially inclined toward black, although its var. *portlandica* is much paler than the type. I have some very dark specimens also

of what I at present believe to be *S. ambigualis*, whilst I have others of this species very pale in colour. Some *S. angustea* vary much in depth of colouring, as also does *S. murana*, the colours of the vars. being darker than the type.—J. TUTT; Rayleigh Villa, Westcombe Park, S.E., January, 1886.

DESCRIPTION OF THE LARVA OF CRAMBUS CONTAMINELLUS.—Last year I reared a few beautiful specimens of this insect; and, as so much interest pertains to the species just now, it may be advisable to place on record a description of the larvæ, which were found by Mr. W. H. B. Fletcher, of Worthing, feeding on either *Poa maritima* or *P. borrieri*, and from whom I received them on June 29th:—Length generally about three-quarters of an inch (though one or two specimens reached nearly an inch), and of the usual *Crambus* shape. Body cylindrical, tapering a little at the anal extremity; head narrower than the 2nd segment, has the lobes rounded, and is, along with the frontal and small anal plate, polished; tubercles large, the front pair on each segment rounded, the back pair linear; the skin has a semi-transparent glossy appearance. The ground is of a pale dingy greyish stone-colour, some specimens tinged with greenish; frontal and anal plates of the same colour, but at each side of the former, and again immediately below it, is an intensely black spot; head pale brown, freckled with darker brown; the mandibles very dark sienna-brown, almost black, indeed; a darker pulsating vessel, varying in colour in different specimens from grey to greenish, forms the dorsal stripe, but there are no subdorsal or spiracular stripes; tubercles of a darker shade of the ground colour, and in each is a small black spot, from which springs a short black hair. Ventral surface of the colour of the ground of the dorsal area; the anterior legs ringed, and the ventral legs margined, with dark brown. Lives in a gallery of silk, constructed in an upright position on the stem of the food-grass, but close to the root, in the same manner as does the larva of *C. perlellus*. The cocoon is about five-eighths of an inch long, a quarter of an inch wide, and is firmly constructed. The first moth appeared on July 28th, the others at intervals until August 23rd. All were of the Lancashire type, and were decidedly larger and broader winged than the only specimen of the Deal insect I have, and which I presume Mr. Tutt sent me as a representative specimen of his *cantiellus*. The five other specimens in my series, I find

from my register, were taken by Mr. Sydney Webb, in the Isle of Sheppey, in July, 1878, and from whom I received them the following month. They also are of the same type as those I bred, and not of the Deal and Blackheath form.—GEO. T. PORRITT; Huddersfield, April 5, 1886.

NOMENCLATURE OF CRAMBUS CONTAMINELLUS, *Hb.* — At the risk of tiring your readers on the subject of *Crambus contaminellus*, I should like to offer a few more remarks about it, especially as the name I have suggested for the new species has been questioned on the law of priority. Of course the priority turns on Hübner's figure, which, as I have remarked (*Entom.* 74), is so bad that it would do for almost anything of the *contaminellus*, *inquinatellus*, *geniculeus*, or *cantiellus* type, if we supposed the greater part of the markings of either worn off, and it is not reasonable to suppose that Hübner figured a worn specimen. But as it stands it bears no resemblance to either the first or the last of the species above named; both insects have two well-defined angulated lines crossing the wings, those of *C. cantiellus* continuous throughout, and those of *C. contaminellus* made of short streaks; and in their typical form I do not believe it possible that Hübner meant it for either. I have in my series some seven or eight dozens of the Deal insect, and out of all this number there is not, and neither have I seen, a single specimen with a dot on the central nervure instead of the first line, which crosses the centre of the wing. It cannot possibly be this species. At any rate his figure does not represent a single specimen in the whole of my series, which, I believe, is as fine and variable as it is possible to get. As I remarked, too, in my last note on the subject, there is a form of the true *C. contaminellus* with the central shade obsolete, and the series of dashes which crosses the centre of the wing reduced to a minimum, the strongest marked, and, in fact, the only clearly-marked streak being found as a linear dot on the central nervure; and I pointed out then that I believed Zeller took this view. Curiously Mr. Tugwell points out that Mr. Stainton had one of Zeller's of this form, "not so strongly marked, but more nearly approached the Preston form, although it wanted the characteristic dark shade between the nervures." This is exactly what I pointed out with this form of Zeller's: "without the dark shade," and "not so strongly marked," gives us an insect which Hübner probably had before him, and

this at once throws us back on to the old form. I think it shows, too, how little Hübner knew about this species when we consider that the nomenclature of *C. contaminellus* as given by Mr. South in his List is *Crambus contaminellus*, Hb.; *C. inquinatella*, Hb.; *C. immistella*, Hb. If he knew so little of the insect as to give it three names himself, no wonder we are in a muddle. The second synonym also points to the probability of the suggestion that the form of *C. inquinatellus* with the dot in the centre of the wing and the broken line, was the subject of his figure. It seems very strange to me that such authorities as Herrich-Schäffer, Heinemann, and Zeller, could have been so far out when they wrote their descriptions. They all, undoubtedly, had Hübner's figure, and yet the former writes distinctly, "with a dark shade stretching to the first cross line." Herrich-Schäffer's figure is excellent, and, as I have before pointed out, Zeller undoubtedly considered the Sussex form the type, and the Deal species *vars.* How could these entomologists all be so distinctly mistaken? They knew both species, undoubtedly, and yet none described our Deal insect. I shall do my utmost to breed the insect next season. I think there will be no difficulty about getting ova. With such a series of the two forms as I have to compare with, I consider it absolutely impossible to suppose them two widely divergent forms of the same species, as we understand the latter term. That all four species of this type had a common origin I suppose most would be ready to admit, but that they are perfectly distinct now as species I feel certain. —J. W. TUTT; Rayleigh Villa, Westcombe Park, S.E.

LEPIDOPTERA OF SOUTHAMPTON.—At no period since 1880 have insects been so plentiful in this part of the country as during the past season of 1885. We have noted in this neighbourhood 428 species of Lepidoptera in all, not including those taken in the New Forest, distributed as follows:—Rhopalocera, 23 species; Sphinges, 9; Bombyces, 43; Nocturæ, 54; Geometræ, 104; Pyralides, 26; Pterophori, 9; Crambi, 17; Tortrices, 83; Tineæ, 60. The following is a record of the less common species met with:—

Colias edusa, one specimen seen in a garden at Romsey. *Vanessa cardui*, was fairly plentiful; several larvæ found feeding on *Gnaphalium germanicum*. *Lycaena argiolus*, met with in good condition as late as the first week in June; it is always double-brooded in this neighbourhood.

Apatura iris, one larva beaten in the New Forest. *Vanessa urtica*, from some cause was remarkably scarce. *Acherontia atropos*, one larva at Romsey. *Sphinx convolvuli*, two imagines only. *Smerinthus ocellatus*, the larvæ very abundant. *Hylophila bicolorana* (*quercana*), *Nudaria senex*, *Calligenia miniata*. *Lithosia griseola* and var. *flava* (*stramineola*), both plentiful. *Arctia caia*, only one larva and three imagines met with during the season. *Spilosoma fuliginosa*, *Heterogenea limacodes* (*testudo*), two larvæ; one on birch and the other at oak. *Dicranura furcula*, *Notodonta dictæoides*, *N. dromedarius*. *N. trimacula* (*dodonea*), pupæ at oak. *Cymatophora duplaris*. *Asphalia ridens*, pupæ at oak. Sugaring for Noctuæ proved a complete failure, so that the number of species met with was small; only fifty-four. *Acronycta tridens*, larvæ. *A. leporina*, one imago in June: in September the larvæ of this species were very abundant, feeding mostly on alder, but also on sallow, willow, and birch; most of the larvæ lose their black tufts and hairs when about half grown, but some retain the tufts till full grown; about two days before commencing to pupate the entire larva, hairs and all, changes to a greenish black colour it then eats its way into rotten wood, and seals the mouth of the hole with silk; we have not met with this species before in this neighbourhood. *Luperina cespitis*, *Agrotis puta*. *Cirrhædia ærampelina*, eight pupæ at roots of ash, from which we obtained seven imagines. *Tethea retusa*, *Cleoceris viminalis*. *Phlogophora meticulosa*, two imagines seen after Christmas, and several during November and December. *Xylina ornithopus* (*rhizolitha*), *Rivula sericealis*. Among the Geometræ we met with the following:—*Epione apiciaria*, *E. adrenaria*, *Eugonia alniaria* (*tiliaria*), *E. fuscantaria*, *E. erosaria*, one specimen at light at Southampton. *Amphidasys strataria* (*prodromaria*), *Cleora glabraria*, *Boarmia roboraria*, and *Tephrosia consonaria*, in New Forest. *T. luridata* (*extersaria*), *T. punctularia*, *Geometra vernaria*, *Zonosoma punctaria*, very abundant, both in spring and autumn. *Z. orbicularia* (New Forest). *Acidalia subsericeata*, *A. immutata*, *A. imitaria*, very plentiful. *A. emutaria* (New Forest), *A. emarginata*, *Macaria alternata* (New Forest), *Abraaxas sylvata* (*ulmata*), on the chalk downs near Romsey. *Pachytenemia hippocastanaria*, first noted on June 1st; taken again in good condition on July 6th. *Eupithecia abbreviata*, not out till April 26th. *Lobophora sexualisata*, both the imago and larva quite common. *Anticlea cucullata* (*sinuata*), one female, taken at dusk at Romsey on July 27th, rather worn. *Coremia designata* (*propugnata*), which has been scarce for some years, was again common. *Eucosmia undulata*, *Pelurga comitata*. *Chesias rifata* (*obliquaria*), fourteen larvæ obtained, out of which number twelve were ichneumonised; last year we obtained eight larvæ, all of which were stung. Among the Pyralides were:—*Pyralis glaucinalis*, *Nemophila noctuella* (*hybridalis*), extremely abundant. *Scopula ferrugalis*, *Ebulea verbascalis*, *Perinephele lancealis*.

Among Pterophori:—*Platyptilia bertrami*, *Ædematophorus lithodactylus*, *Leioptilus microdactylus*. Among the Crambi were:—*Crambus falsellus*, *C. dumetellus*, *C. hamellus* (New Forest), *C. perlellus*, *C. warringtonellus*, *C. inquinatellus*, *C. geniculeus*, *Homocosoma sinuella*, *Aphomia sociella*, *Achroa grisella* (*alveariella*). Of the Tortrices we obtained:—*Dichelia grotiana*, *Ænectra pilleriana* (New Forest), *Orthotania antiquana*, *O. striana*, *Phoxopteryx siculana*, *P. uncana*, *P. biarcuana*, *P. derasana*, *Retinia pinicolana*, *R. turionana*, *Stigmonota regiana*, *Dicrorampha politana*, *Choreutes myllerana* (*scintillulana*), *Eupcecilia nana*, *E. ambiguella*, five specimens taken during first week in June amongst birches. Of the Tinea:—*Talaporis pseudo-bombycella*, *Adela degeerella*, *Hypnomenuta rigintipunctatus*, *Cerostoma sylbella*, and *Henicostoma lobella*.—W. R. BUCKELL, 4, Laura Place, Southampton; E. BUCKELL, Romsey; March, 1886.

LEPIDOPTERA IN MIDDLESEX.—As far as the Macro-Lepidoptera of Middlesex are concerned, I can fully indorse the very interesting remarks of Mr. T. D. A. Cockerell in the March number of the 'Entomologist.' Having collected for some years in the neighbourhood of Chiswick, I have a tolerable acquaintance with its entomological fauna. We have here at least 156 species of Macro-Lepidoptera, besides a few more which are of doubtful occurrence. The Rhopalocera number fifteen species, including *Vanessa polychloros*, *Epinephele ianira*, *Lycæna icarus*, and *L. argiolus*, of which last we have the two broods. The Sphinges are 10:—*Chærocampa porcellus*, *C. elpenor*, *Macroglossa stellatarum*, *Sesia tipuliformis*, *S. myopiiformis*, and five others. Of the Bombyces twenty-five species occur, including *Arctia villica*, *Hepialus sylvanus*, *Drepana lacertinaria*, *D. falcataria*, *Dicranura furcula*, *D. bifida*, and *Notodonta dictæa*. Among the fifty-eight Noctuæ recorded are the following species:—*Bryophila perla*, *Hydræcia micacea*, *Xylophasia hepatica*, *Apamea ophiogramma*, *Triphæna interjecta*, *Anchocelis lunosa*, *Calymnia affinis*, *Hadena trifolii* (*chenopodii*), and *Cucullia chamomillæ*. The Geometræ at present only reach a total of forty-eight species, but I am certain that others are to be found in the neighbourhood. *Ligdia adustata*, *Eupithecia coronata*, *E. rectangulata*, *Melanippe rivata*, *M. sociata*, *M. montanata*, *Eucosmia certata*, *Cidaria silaceata*, *C. dotata*, *Pelurga comitata*, all occur in the district. I think I have now given a list sufficient to prove that there are still many insects to be taken within the metropolitan district.—ALFRED SICH; Chiswick, W., March 22nd, 1886.

LEPIDOPTERA OF CHISWICK.—My recollections of collecting at Chiswick fifteen years ago, and further back still, left me with the impression that a good many species occurred among the market-gardens and in the lanes next the grounds of the Horticultural Society. Changes since then have altered the locality, so that some have disappeared; and it would require now brave indifference to the public gaze to flourish a net where I used to find semi-rural retreats. To the Sphinges might then have been added *Macroglossa stellatarum*, occurring in very small numbers on *Galium* along the hedgerows; and, what probably still remain, *Sesia tipuliformis* and *S. myopæformis*, breeding in the orchards. Mr. Cockerell does not name the familiar *Cossus* (Entom. 65); omitted by accident, I presume, since it is common all round London. *Hepialus lupulinus* was sometimes frequent on palings, with several of the species popularly called “waves” (Acidaliidæ). Amongst Noctuæ there were many stragglers, but none abundant, except the garden pests, like *Mamestra brassicæ*, *M. persiciaræ*, &c.—J. R. S. CLIFFORD; Gravesend, March 1, 1886.

LEPIDOPTERA AT WISBECH.—The past season was, generally, only an average one in this neighbourhood, the most notable exceptions being the comparative abundance of pupæ of *Hyssipetes ruberata* in the early part of the year, and the swarms of *Nonagria lutosa* at light in the autumn. Among other things which were fairly plentiful I may mention *Smerinthus tiliæ*, seven of which I netted one evening, one, a male, being a very red variety; *Ennomos alniaria* (*tiliaria*), and *Stigmonota regiana*. *Leucoma salicis*, too, formerly an abundant species here, but which had rarely been taken for many years, put in an appearance in moderate numbers. I took one *Asteroscopus sphinx* (*cassinea*) at light on November 10th.—GEORGE BALDING; Ruby Street, Wisbech, February, 1886.

LEPIDOPTERA OF PURBECK.—In your notice of the Lepidoptera of Purbeck (Entom. 95), in vol. vi. of the ‘Dorset Field Club Proceedings,’ you remark upon there being but few authorities given for the various records. The fact is that where no special authority for a record is given, the insect named in the list has been taken by either Mr. Digby or myself. We ought perhaps to have stated this more plainly in the preface.—EUSTACE R. BANKES; The Rectory, Corfe Castle, April 6, 1886.

CAPTURES AT SALLOW-BLOOM AT CHRISTCHURCH, &c.—The following is a list of my captures this year at sallow, during a fortnight's stay in this neighbourhood from the first week in April:—*Calocampa exoleta*, *Xylina ornithopus* (*rhizolitha*), *Xylocampa arcola* (*lithoriza*), *Pachnobia rubricosa*, *Teniocampa munda*, *T. gracilis*, *T. pulverulenta* (*cruda*), the three commoner species of *Teniocampa* being in great abundance; at dusk and light, *Anticlea nigrofasciaria* (*derivata*), *Cidaria suffumata*, *Hybernia marginaria* (*progemma*), and *Anisopteryx æscularia*.—J. M. ADYE; Somerford Grange, Christchurch, April 17, 1886.

ABNORMAL PAIRING BETWEEN LEPIDOPTERA.—Amongst the numerous hybrids that has ever been possible to obtain, I am almost certain that never a case such as I here mention has previously occurred. All entomologists are well acquainted with the *Sphinx ligustri*, while perhaps it is not the same case with the *Attacus cecropia* of North America. From the 17th till 19th of February, this year, I had several *S. ligustri* emerge; amongst them was one female. They refused to pair, although kept in a warm room. These, however, lived for a long time, very seldom flying or even moving from their place. On the 22nd of March my *A. cecropia* moths began to emerge, the first being a male. In the cage where this male had emerged was still the female *S. ligustri*. The next morning, about 10.30, I noticed the male *A. cecropia* flying towards the female *S. ligustri*, and finally, after some efforts, paired. This, I thought, was such an extraordinary pairing that I immediately sent for a neighbour of mine, who also studies Entomology, to show him and witness the pairing, in order that my statement should not be doubted. The female laid half of her eggs one day after the pairing, and died. The eggs were half empty and partly dried. This I attribute to the female being too old. The pairing lasted eleven hours and a half, and had the female been a fresh specimen I believe the eggs would have been fertile.—J. A. WENIGER; 11, Cambridge Terrace, Gerrard Street, Islington, N., April, 1886.

LOST LEPIDOPTERA.—Why should *Tapinostola extrema* (*concolor*) be as good as lost as a British insect, for one now never hears of its capture? It was once before "lost" when a man who used to take it retired, for the good of his country, for some time; but no sooner did he return to his liberty than "*concolor*"

again turned up! So far as I remember the late Thomas Allis said this man used to *smoke* them out of partially dry ditches, when it occurred freely enough with plenty of *Nonagria cannae* and *N. neurica*. Is it that the right time of appearance is lost? though that may be judged by the last two; or is the locality of the right ditches lost? These were said to be near Yaxley. Then also was *Noctua subrosea* thought no more of than any ordinary local moth at the present time. There were plenty to be had before a terrible fire swept its locality, since which none have been caught, or possibly they may not have been sufficiently looked for. By the way, I recently saw some foreign *N. subrosea* very like our British ones, indeed not much different.—J. B. HODGKINSON; 6, Fishergate Hill, Preston, March 7th, 1886.

PRESERVATION OF SMALL LARVÆ.—Can any of your numerous readers tell me a good way of preserving small larvæ? The apparatus mentioned in the 'Insect Hunter's Companion' (pp. 19–21) answers extremely well for the larger caterpillars, but is not adaptable for the small Tortrix or Tineæ larvæ. Is there any way of preserving these minute larvæ, except by inflation, so as to render them convenient for placing in one's cabinet by the side of the imagines?—A. E. HALL; Norbury, Pitsmoor, Sheffield.

EXCHANGING FRESHLY-CAUGHT SPECIMENS.—It has occurred to me that through the introduction of the parcels-post a new method has been opened up for the transmission of insects in exchange. Hitherto we have been in the habit of sending our specimens set and dried by means of "postal boxes," wrapped in cotton-wool, which travel (as a rule) for twopence by letter-post, and sometimes (*experto crede*) get very considerably damaged in the process. But, now that we can send 1 lb. by parcels-post for 3d., why should we not make use of the zinc pocket collecting-box, and send our insects fresh killed and unset, simply pinned on the damp cork, so that our friends may pin and set them after their own favourite fashion? I am bound to say that I have not tried this plan, as the idea has only just occurred to me; but it sounds feasible at all events, and I hope you will allow me to throw out the suggestion for the consideration of entomologists before the busy season sets in.—CHARLES F. THORNEWILL; The Soho, Burton-on-Trent, Feb. 20, 1886.

MOTH TRAP.—I commenced operations several years ago with a trap constructed by myself on the same principle as that described as having been applied to the window of a room in America, and which I thought might be of corresponding service if a box or trap took the place of room. With this I did not do very well, and accordingly from time to time altered and added to the glass arrangements, until, about five years since, I succeeded in constructing as perfect a trap as I think could be devised. I had a sight some time ago of one of the "American moth traps," and found that it was somewhat similar to my own; mine, however, has a "shoot" leading down from the four converging planes of glass, which leaves, as the only aperture of escape, a space about four inches in length by an inch and a quarter wide. The body of the trap is made of wood, and not metal, and I have at the bottom a layer of small branches and leaves instead of the divisions in the American one. I should also mention that my trap was hooked up outside the fanlight of hall door of my late residence, just fitting the fanlight, and was illuminated by a strong gas burner fixed inside the fanlight, having a powerful reflector behind it. I was consequently able to vary the amount of light as desired; it always remained clear and steady, and there was not the slightest fear of any accident. There was an unobstructed view across the River Thames for some fifteen miles, and to this fact I attribute much of my success. My record of captures during the four seasons ending Midsummer last, when I removed to my present home, is as follows:—*Bombyces*, 47 species; *Noctuæ*, 139; and *Geometræ*, 118; making a total of 304 different species. Of this number many were, of course, single captures, but the greater number were taken more or less freely, and in good condition as a whole, numbers of them being equal to bred. It was no uncommon occurrence during the busy time for me to box some forty or fifty specimens every morning that were of use to me, and to let numbers go as well. Of *Micros* I have kept no record, as I do not collect them; but their number was legion. The enclosed portico or porch in front of the hall door was generally pretty freely used as a resting-place by those individuals that did not care to investigate further; consequently I often found as many good things outside as inside the trap. In my present residence I have not the facilities for placing the trap in the same position as before, but have tried

it outside the window of a shed in the garden with a lamp and reflector inside the shed, but the results were quite insignificant; evidently position is everything, and a really good light essential. E. SABINE; 22, The Villas, Erith, March 9th, 1886.

MOTH TRAPS.—In reference to the moth trap described in the "Field Naturalist's Handbook," I made one according to description last summer, and have tried it for several nights during last season, but have trapped nothing, though moths came to light at the windows of a house close by. I should like to know if anyone else has found it successful, and, if so, were the insects very much damaged by fluttering in the trap.—H. KING; 52, Pimlico Road, London, March 3rd, 1886.

MOTH TRAP.—Referring to the remarks and inquiry made by Mr. A. E. Hall (Entom. 45), I may say that in the spring of 1884 I constructed, with but slight modifications of my own, a light trap on the principle of that described by Mr. H. G. Knaggs in his practical little book the 'Lepidopterists' Guide.' The size of my trap is 18 ins. by 13 ins. by 16 ins., with a drawer about three inches deep running along the bottom, thus making the front aperture 13 inches square. I use a lamp with a single inch wick, but a powerful bright reflector. Unfortunately my business arrangements did not permit me to make any use of it during the past season, but during the summer of 1884 I tried it frequently, and hardly ever entirely without success. I usually fixed my trap against the back of the house, facing towards the south-west, at a height of eight or nine feet from the ground. I cannot say that it has secured me any rarities as yet, or even that the "game" so far has been "worth the candle," but amongst the insects thus taken I may mention *Spilosoma lubricipeda* and *S. menthastri* (the former frequently), *Apamea didyma* (*oculea*), *Rumia luteolata* (*cratægata*), *Eupithecia vulgata*, *Pionea forficalis* (several times), *Scopula lutealis*, several species of Crambidae and Tineæ, besides insects of other orders, especially the Diptera. To judge from my experience, dark still nights after a *fine* day are much the best, but unfortunately these are not nearly so plentiful as one could wish. Though at present I by no means regard the trap as a successful agent, I shall certainly give it a further trial if possible during the coming season, as it seems to me that with a little manipulation as

regards the placing, &c., it might perhaps be turned to good account amongst the Micro-Lepidoptera.—L. L. SAMUELS; Victoria Park, Manchester, Feb. 15, 1886.

MIGRATION OF INSECTS.—A proposition has been made in Ceylon for the systematic observation of the singular migration of butterflies in that island. Despite occasional references in the local press, nothing has yet been done towards compiling and editing a scientific and comprehensive record of annual observations. It is proposed, therefore, that volunteers should watch for the migration, and send a post-card bulletin to the editor of the records, noticing date, direction of flight, direction of wind, the weather, and the species. For the last purpose amateur observers are to send one specimen of each species noticed, in order to ensure scientific accuracy. A competent naturalist is stated to have offered to revise, assort, and edit all such notices once or twice a year, and publish a periodical report of progress. The annual summary will appear in the 'Taprobanian Magazine.'

NEWSPAPER ENTOMOLOGY.—In these days of School Boards and cheap science classes it is hardly credible that any person could be found to pen the following paragraph, cut from the 'Western Morning News' of March 31st, 1886, and dated Capetown, March 10th. The italics are our correspondent's, who, in sending this literary curiosity, added, "This is reversing the natural order of things with a vengeance." "From Durban it is reported that much alarm has been caused in the Camperdown district by the scourge of armies of caterpillars which have appeared amongst the forage crops. One army extends a mile and a half deep, and has swept over about seventy acres of fine forage; another, comprising many millions, has eaten every bit of forage in one district; and the two armies are on the eve of joining, when it is feared that more damage will be done than the pest caused in 1878. *It makes its appearance in the form of a small moth, in a few days it sheds its wings, becoming a caterpillar, and in a week it lays eggs, each caterpillar producing two hundred.* They blacken the fields as they move about voraciously eating; and in one place forty acres of forage were reduced to stubble."

ERRATA.—Entom., p. 93, line 3, for "Paris" read "Parà"; and at p. 81, line 8, read "came at 2.30 and for about an hour," instead of "some 230."

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*April 7, 1886.* Robert M'Lachlan, F.R.S., President, in the chair.—The following were elected Fellows of the Society, *viz.*: Messrs. E. Capron, M.D., J. W. Ellis, L.R.C.P., F. D. Wheeler, M.A., J. B. Bridgman, F.L.S., T. D. Gibson-Carmichael, F.L.S., J. Rhodes, F.R.M.S., A. C. Horner, J. T. Harris, Evan John, Martin Jacoby, J. A. Clark, G. Elisha, and A. Sidney Olliff. Mr. Crowley exhibited a number of Lepidoptera, including a long series of species belonging to the genus *Rhomalæosoma*, containing many unusual forms, lately received from Accra, West Africa; also, from the same locality, about sixteen species of the genus *Charaxes* in remarkably fine condition, and represented by specimens of both sexes. He also exhibited a number of large specimens of *Saturnia* from Natal, and several unknown species of other genera. The Rev. W. W. Fowler exhibited four beetles belonging to the family Carabidæ. Three of them had been taken twenty years ago on the banks of the Clyde, and had lately been identified as *Anchomenus sahlbergi* (Chaud.), a species new to Europe, having hitherto only been found in Siberia. The remaining specimen was *Anchomenus archangelicus* (Sahlb.), a North European species nearly related to *A. sahlbergi*, but easily distinguishable therefrom by the greater depth of the striæ of the elytra. Mr. J. W. Slater exhibited, on behalf of Mr. Mutch, a spider belonging to the genus *Galeodes*, and a Lamellicorn beetle belonging to the genus *Cetonia*, which was at first supposed to be a monstrosity, but was afterwards found to owe its unusual appearance to the right elytron having been broken off and fixed on in a reversed position. He also exhibited an undetermined species of a beetle belonging to the family Curculionidæ. Mr. Billups exhibited a specimen of *Bassus bizonarius*, an ichneumon new to Britain, taken at Peckham in May, 1885; also a number of specimens of another parasite, *Dimeris mira* (Ruthe), taken in Headley Lane, Surrey, in March last. Mr. White exhibited preserved specimens of the larvæ of two species of the genus *Catocala*, for the purpose of calling attention to some remarkable processes on the under side; and Prof. Meldola and Mr. J. Jenner Weir made some observations on them. Mr. S. Edwards exhibited an unknown

exotic spider, found in his orchid house at Blackheath. Mr. H. Goss exhibited two remarkable varieties of the male of *Argynnis paphia*, taken in Sussex and Hampshire respectively. Mr. A. G. Butler communicated a paper entitled "Descriptions and remarks upon five new Noctuid Moths from Japan." The Rev. W. W. Fowler read a paper on "New genera and species of *Languriidae*," chiefly from specimens in the collections of the British Museum, the Cambridge Museum, Mr. Lewis's Ceylon collection, and the collection of the Rev. H. S. Gorham. In alluding to a species described in this paper, Mr. Champion remarked that he had taken the elongate form, and also the broader form, on trees as well as on low herbage in Central America. Dr. Sharp remarked that Mr. Lewis's experience of the habits of the species in Ceylon appeared to have been different. Dr. Sharp read a paper "On some proposed transfers of generic names." This paper called attention to a practice advocated by Mons. Des Gozis, which was apparently extending on the Continent, of transferring the names of some of the commonest genera to other genera. The extreme confusion caused by the practice was pointed out, and the author showed briefly that the theory on which Mons. Des Gozis's system was based was as unsound as the practice itself was objectionable. Considerable discussion followed the reading of this paper, in which the Rev. W. W. Fowler, Mr. Waterhouse, Mr. M'Lachlan, Dr. Sharp, Mr. Pascoe, and Mr. Dunning took part. The last-named gentleman said that the discussion reminded him of a similar one, on the application of the law of priority to genera, which took place at a meeting of the Society nearly twenty years ago. The project was then condemned as unanimously as that of Mons. Des Gozis had been that evening; and he trusted that entomologists would hear no more of it.—H. Goss, *Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*April 1st, 1886.* R. Adkin, Esq., F.E.S., President, in the chair.—Messrs. C. H. Watson, G. T. Shearwood, Stanley Edwards, A. Beaumont, and B. W. Adkin, were elected members. Mr. Goldthwaite exhibited series of *Cænonympha typhon*, Rott., and *Erebia æthiops*, Esp. Mr. Cooper: *Drepana binaria*, Hufn., *D. cultraria*, Fb., and *Erastria venustula*, Hb., from Epping Forest; imagines and pupa-cases of *Eupœcilia ambiguella*, Hb.,

from the New Forest, and varieties of *Lycæna icarus*, Rott. Mr. J. T. Williams: a fine series of *Eriogaster lanestris*, L., and varieties of *Hybernia leucophæaria*, Schiff. Mr. E. Joy: *Nyssia hispidaria*, Fb. Mr. Stevens: *Asteroscopus nubeculosa*, Esp. Messrs. South and Tugwell: fine series of *Hybernia marginaria*, Bork., var. *fuscata*. Mr. South said the specimens exhibited were bred from ova received from Mr. J. Harrison, of Barnsley, who stated that the eggs were deposited by a dark female which had been in union with a melanic male. Mr. Billups exhibited the following *Coleoptera* taken by him in Headley Lane on the 22nd March, 1886:—*Panagadæus quadripustulatus*, H.M.; *Lebia chlorocephala*, E. H., and *Brachinus crepitans*, L.; also two species of *Diptera*,—*Sciaria pulicaria*, Hoff., and *Trichocera regellationis*, L.,—bred from apples. Exhibits in other branches of Natural History were also of an interesting character. Mr. Cooper exhibited several groups of eggs of British birds. Mr. W. West read a paper on “The Entozoa,” which was illustrated by diagrams and the exhibition of microscopical specimens.

April 15th. R. Adkin, Esq., F.E.S., President, in the chair. —Messrs. T. D. A. Cockerell, A. J. Windybank, T. P. Newman, W. H. Wright, T. Gibbs, jun., and W. F. V. de Kane, were elected members. Mr. Mera exhibited a fine series of *Syntomis phegea*, Linn., bred from ova deposited by a female taken in Italy. Mr. E. Joy: a variety of *Canonympha pamphilus*, L., taken at Hadley Wood, near Barnet. Mr. Tugwell: a bred series of the Dover form of *Cidaria suffumata*, Hb. Mr. Wellman: specimens of *Phoxopteryx upupana*, Tr. Mr. Billups exhibited a curious construction which had been found by Mr. J. T. Williams at the root of a tree in his garden at Foots Cray. The formation consisted of about fifteen or sixteen fusiform cocoons composed of a felt-like material, and arranged side by side, vertically and transversely, the whole forming a pear-shaped mass. Each cocoon contained a larva which Mr. Billups said was certainly not dipterous or hymenopterous, but might probably be the larva of a species of *Lepidoptera*. Several members concurred in this opinion.—H. W. BARKER, W. A. PEARCE, *Hon. Secs.*

REVIEW.

Ninth Annual Report of the Lancashire and Cheshire Entomological Society, 1885.

This Report is by no means encouraging, and suggests that, through the influence of "bad times" or other reason, Entomology in the Liverpool district is rather at a discount, at least as indicated by its representative Society. This report consists of a short presidential address by Mr. S. J. Capper and a very meagre report by the Secretary, who states that in consequence of the limited attendance of members at the excursions last year this pleasant feature is this season to be discontinued. The revenue has also been so restricted that the balance appears on the wrong side, even though economy seems to have been practised, as no books have been added to the library by purchase during the past year. Surely some effort should be made to resuscitate the fallen fortunes of the Society, which ought to number more than fifty-eight members, as it is supposed to represent the populous counties of Lancashire and Cheshire.

OBITUARY.

THOMAS EDWARD—immortalised by Smiles in his 'Life of a Scottish Naturalist'—died April 27th, 1886, aged 72 years, having been born on Christmas Day, 1814. Edward's knowledge of Natural History was rather diffuse than special; so that as an entomologist he collected all orders without gaining exceptional knowledge of any. In him the taste for Natural History seemed to have been inborn, as may be gathered from the many interesting and amusing stories told by Mr. Smiles in his 'Life.' By the lucky chance of that author pitching upon Edward, when searching for a subject for a new work, the self-taught naturalist became suddenly celebrated and fashionable; the result being that from comparative poverty Edward was raised to a condition of comfort by a subscription which realised about £333, and later he received a pension of £50 a year by order of the Queen. There is much to admire in the unsophisticated life of this type of Nature's gentleman, a type by no means so rare among the working naturalists of this country as is imagined by the many who only see the world superficially.—J. T. C.

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VARIATIONS OF *MELITÆA ATHALIA*, ROTT.

BY W. F. DE VISMES KANE, M.R.I.A., F.E.S.

IN the report of the South London Entomological and Natural History Society for 1885 there are some interesting notes, by Mr. South, on forms of *Melitæa athalia*, Rott., bred from North Devon larvæ. Certain of the specimens are stated to approach very closely to Swiss *M. aurelia*, Nick.; another to approximate to Swiss *N. dictynna*, Esp.; and some of the under sides to resemble those of Swiss *M. parthenie*, Bkh.

Mr. South's notes of these forms are very reconcilable with the unstable conditions that at present prevail in the group of *Melitæa*, comprising the allied species of *athalia*, Rott., *aurelia*, Nick., *parthenie*, Bkh., *dictynna*, Esp., and their varieties. The group is undoubtedly a perplexing one; and with its topomorphic, oromorphic (mountain), and pediomorphic (plain) forms, presents a field for laborious but interesting study.

In the first place I may point out that the patterns presented by the under sides are extremely variable and uncertain; that of *dictynna*, however, presenting some remarkable features, variable indeed, and partially reproduced among specimens of allied species, but still of a distinct character. The pearly band of the variety *varia* also is very characteristic, but merges into that of the type, *parthenie*, Bkh. As all the rest are infinitely changeable both in colour and shape of marking, no conclusion can, I think, safely be drawn from the under side of Mr. South's Devon insects.

As to the similarity to *M. aurelia*, Nick., it will be found that

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in Switzerland it sometimes graduates indefinitely into a form of *athalia*, Rott., and is very variable. Mr. South has, perhaps, specimens of this Swiss form. The German *aurelia* is a finer insect than the Swiss. The Swiss *athalia*, Rott., is also a smaller and less strikingly marked insect than that of North Germany, and, as Mr. South notices among his Swiss examples, often approaches *parthenie*, Bkh.

There is an oromorphie form also of *M. athalia*, Rott., that is very near to the pediomorphic one of *M. dictynna*, Bkh., which latter is larger, better coloured, and with more spots on the hind wings than that which occurs at higher elevations. Different altitudes, in like manner, affect the Swiss *M. athalia*, Rott., which in the warmer lowland is finer in size and colour, and whose extreme pediomorphic form is represented by the aberration *corythalia* of France. (I am in doubt about the synonymy of *corythalia*, Hb., of Sven Lampa's 'Catalogue of Scandinavian Macro-Lepidoptera.')

Melitæa parthenie, Bkh., shows parallel variations. The North Swiss form is large and bright. The oromorphie form graduates insensibly into the small var. *varia*. There is also an approximation to *M. dictynna* sometimes observable; but the characteristic mentioned in my 'Handbook of European Butterflies,' namely, of the palpi being yellow above, is, I think, pretty constant. The question, which certainly forces itself upon one's attention, is whether these various specific types, which graduate into each other so remarkably, do really constitute true species? The group, as defined above, being at present in such an unstable condition throughout, renders any decision very difficult.

The species thus named, and usually accepted, are fairly definite; and are of use, at any rate, in so far as they indicate centres of more or less stability, geographically widely spread, and whose patterns are separated one from the other by intermediate links of more unstable character.

With regard to the geographical range of these species in question, I may remark that I have Scandinavian (Upland) specimens of *M. athalia* which only differ in a slightly paler tone of fulvous from Central European forms. Both *M. aurelia*, Nick., and *M. parthenie*, Bkh., are reported from various parts of Scandinavia; and the var. *varia* from Norway, by Herr Sven Lampa.

OBSERVATIONS ON *ACHERONTIA ATROPOS*.

BY RICHARD SOUTH, F.E.S.

THE native home of *Acherontia atropos* is probably in sub-tropical regions of Africa and Arabia, but the species has a geographical range extending throughout Europe and Western Asia almost to the northern boundary of the colder temperate zone. This boundary is represented by the isotherm, or line of mean annual temperature of $42\frac{1}{2}^{\circ}$.

The occurrence of *atropos* in any country or district within the colder temperate zone is, however, of a somewhat fluctuating character. In Great Britain, for instance, the species has been observed at some time or other in nearly every part of the kingdom, from the Scilly Isles to the Orkneys and Shetlands; also in many parts of Ireland. If I am correctly informed it would seem that the species is observed almost every year in one or more counties on our eastern or south-eastern coasts; and Mr. Packman, of Dartford, tells me that he cannot remember any year in which larvæ of *atropos* did not occur in greater or lesser numbers in his district. On the other hand, the annual recurrence of *atropos* in the majority of British localities, from which it has been recorded, is uncertain.

The records concerning *atropos* in our entomological magazines are not so full and complete as to furnish a register of all imagines observed or larvæ and pupæ noticed in the United Kingdom for any given period; still such records afford data from which we may infer the yearly abundance or scarcity of the species. Referring then to the magazines for twenty-one years past, it will be found that from 1865 to 1872 *atropos* was probably scarce in the year 1866 only; but that between 1872 and 1877 there was a period of four years during which the species was apparently very scarce, as not a single record of the occurrence of *atropos* in any stage in the British Islands is to be found for the years 1873 and 1874, and only two imagines are noted for 1875 and 1876 respectively. Immediately following this long interval of scarcity the species appears to have been common for two years in succession (locally, 1877; and generally, 1878); then in alternate years it seems to have been generally scarce or locally common till 1885, when it was once more plentiful or even abundant, and

at the same time widely distributed in England. The occurrence of *atropos* in the British Islands since 1864 is as follows:—scarce—1866, 1873, 1874, 1875, 1876, 1879, 1881, 1883; common in certain localities only—1867, 1869, 1870, 1871, 1872, 1877, 1880, 1882, 1884; widely distributed and generally common—1865, 1868, 1878, 1885.

Looking over the dates of capture, I find that during the past twenty years one or more examples of *atropos* have been taken in each month from May to November inclusively. The latter date, however, appears to be exceptional, as only one is recorded for this month. July stands next in order with two; June and August three each; May and October five each. For September the records are not altogether clear, but I find that ten specimens are distinctly noted as having been captured in this month. It would therefore seem that September is pre-eminently the month for imagines of *atropos*, at least in certain years, as August appears to be for larvæ of the species. As regards the larva, the earliest recorded date is July 30th, when a dozen larvæ were found at Burton-on-Trent, in 1878, feeding on *Lycium barbarum*, and the latest October. The last refers to a single larva found, together with twenty-six pupæ, in potato fields near Liverpool, also in 1878. Packman assures me that he has sometimes obtained examples almost full fed at the end of June.

I may add that in Morocco *atropos* is on the wing in March, and at Algiers and various places along the Mediterranean imagines are frequent in August, while at Gallipoli, on the European side of the Sea of Marmora, Mr. G. F. Mathew has found larvæ of the species abundant in October and November.

The earliest date at which pupæ of *atropos* have been obtained in a state of nature in this country is, as far as I am aware, the end of August. These disclosed imagines in September. When the potatoes are raised in September and October is, however, the time that pupæ usually come into the possession of entomologists. Various plans for forcing the imago of *atropos* have recently been referred to in these pages, and I notice that employed by Dr. Livett, *ante*, p. 126, because the results obtained contrast so curiously with Mr. Anderson's experiment (*Entom.* xi., 188). The latter gentleman used what may be termed the "dry process," and from twelve pupæ obtained eight imagines, but not one of these could be considered forced. The order of

emergence was November (1), June (6), July (1). Dr. Livett combined moisture with warmth, and induced imagines to emerge in December and three following months. Both methods were identical in one particular, that is the fires, before which the pupæ were placed during the day, were not kept up at night. I know well what tender subjects the pupæ of *atropos* are, but if it is permissible for me to form an opinion after a somewhat limited experience in their treatment, I would say that in a general way, if carefully protected from cold and left undisturbed, they will yield imagines in the early summer months, almost, or perhaps quite, as well as they would do if put through a course of "forcing" during the winter. I shall have occasion, however, to qualify this opinion presently.

That *atropos* is nomadic in its habits I see no reason to doubt. The species has frequently been observed at sea, often at a considerable distance from land, and in situations where its presence could not be involuntary. The occurrence of *atropos* in unusual places on land is not generally considered as evidence of the insect's roaming disposition, but I think we can hardly look upon its appearance in such unlikely places as the busy thoroughfares of our largest cities in any other light. Then again, is it not probable that the specimens captured in the Orkneys, Shetlands, and Isle of Man, were either visitors from the mainland or the issue of female *atropos* which had visited those isles in the summer months, seeing that the occurrence of the species in those places is an extremely rare event?

If it is a fact that *atropos* occurs every year in Kent or any other county on the east or south-east coasts, such counties may be considered as the nurseries of the species in Britain, and we may suppose that imagines occasionally or habitually forsake the place of their birth and roam about over the other portions of the country, often extending their rambles to the most distant parts of our islands. In the course of their peregrinations vagrant female *atropos* may deposit ova here and there, and subsequently larvæ and pupæ be found in localities where the species is certainly not of annual occurrence.

On the other hand, it may be contended that, although *atropos* is rarely seen in certain localities, still we have no proof that the species is not present in those places each year, and therefore, in the absence of such proof, we ought not to assume that *atropos*

does not occur annually therein. It is certainly possible that the species may breed regularly in almost any locality in which it has been observed, but that it rarely comes under the notice of the naturalist. I cannot, however, think this is probable, and should meet any such argument by reference to the remarks appended to notices of captures recorded by entomologists who have long resided in particular districts. From such observations it is quite clear that *atropos* is either a decided rarity in, or novel to, many localities in Great Britain. I submit that it is quite in accord with the facts to conclude that *atropos* is rather a wanderer in, than a denizen of, the greater portion of Britain, and that the imagines and larvæ which occur outside those counties in which the species is more or less constant, are either migrants or the offspring of migrants. If it is admitted that *atropos* is a nomad, we may, without doing violence to the possible, very well suppose that examples sometimes, perhaps not infrequently or in small numbers, come to these islands from the continent. I cannot understand the abnormal abundance of the species in certain years in any other way than by supposing that our *atropos* are, at such times, assisted in the work of reproduction and distribution by immigrants.

It is generally understood that there is but one brood of *atropos* each year in this country. Whether this is ordinarily the case or not I am unable to say, but in some years there would certainly appear to be two broods of the species with us. For instance, the nearly full-fed larvæ found at the end of June would surely attain the imago state before September. Probably such early larvæ are from ova deposited early in May,* and produce imagines at the end of July or beginning of August, and these again become the progenitors of the late September and October specimens as well as of those which remain in pupa until the following year. Then as to the parents of the June larvæ, the question which suggests itself to me is, Were they British born?—that is, had they emerged from pupæ in any part of the British Islands? We see that, excepting the November specimen, Mr. Anderson did not get out his imagines before

* In 1878 single specimens of *atropos* were taken on the South Devon coast, and on the sea-shore, Antrim, N. Ireland, on the 6th and 8th of May respectively, and another example was captured in the City of London, May 2nd, 1882.—R. S.

June. I am also aware of other instances where the results have been the same. The few pupæ I have had at various times disclosed imagines in June, and the earliest specimen I know of from hybernated pupa was bred on the 27th of May. I think it probable, therefore, that specimens of *atropos* seen here early in May have not emerged from pupæ in this country, but that they are immigrants.

This is just where the difficulty comes in with regard to treating pupæ of *atropos* found in the autumn, the imagines from which have not emerged by the end of October. If they are of immigrant parentage they will probably require artificial warmth to bring them to maturity, but if from British stock all that is necessary is to keep the frost from them. Perhaps larvæ which are to produce imagines in the following year go some depth into the ground to pupate, where they are protected from the effects of ordinary frosts, while those destined to attain the imago state the same year pupate either on or near the surface. If this were so some indication of the treatment required would be afforded by noting the situation in the soil of the pupæ found, but, even if we could take the position of the pupæ as a guide, we have no certain clue to their origin, and, although the simple precautions adverted to would suffice with pupæ from British stock, the same thing would not do, or at least would be risky, with pupæ from immigrant parents. I think, however, when larvæ and pupæ of *atropos* are more than usually abundant, we may fairly suspect that the foreign element is largely represented, and consequently we should treat any pupæ we may have at such times with becoming tenderness.

In conclusion I may say that a species is none the less British because the representatives of such species in this country are the offspring of immigrant parents. In whatever country a species may naturally effect its metamorphoses, although it may not be native thereto, it has a legitimate right to be considered as belonging to the fauna of that country. (Of course, imagines from imported ova, larvæ, or pupæ, even if captured in this country, are not British.) If we were only to recognise as British such species as were actually indigenous, I am afraid that we should have some trouble in drawing up a satisfactory insect fauna list.

To what extent the insect fauna of the British Islands has been augmented by immigration alone since they were separated

from the Continent of Europe we have no means of ascertaining, but I think that in the present day there are certain species which from time to time land on our shores and endeavour to colonise in suitable localities in our islands. The majority of these species seem, however, unable to effect a permanent establishment here.

12, Abbey Gardens, London, N.W., May., 1886.

A NEW CECID.

BY PETER INCHBALD, F.L.S., AND R. H. MEADE, M.D.

CECIDOMYIA MURICATÆ, n. sp.

I HAVE to record that I have succeeded, during the present month, in rearing a Cecid reputedly new to science. At all events Bergenstamm, in his Synopsis, published in 1876, says of it, "Imago unbekannt"; adding, as he groups it with other unknown and undescribed Cecids in the imago state, on the authority of Professor Loew, "Die larven deformiren die Früchte von *Carex muricata*." I gathered the affected heads of the *Carex* in July of last year. The larva was then feeding on the embryo-nucule of the flowers, ensconced in the utricle, which is open at the end for the protrusion of the stigmas. Within this sac it pupated, spinning for itself a slight papery cocoon towards the end of the autumn. By removing a portion of the utricle the larvæ and pupæ were visible by means of a lens. The seed-heads were kept slightly moist by occasional sprinklings during the winter months. In February or March of the present year all had pupated. At the end of April the red pupæ became redder through their slim covering, and I inferred that a further change was approaching. On the 16th of May my patience was rewarded: twelve Cecids appeared in my glass-topped box, mostly females; but happily I observed among them a few males. Each succeeding morning, for a week and more, gave me a bevy of the tiny gall-gnat. I counted upwards of twenty on one morning. Dr. Meade, to whom I sent specimens, has kindly offered to append a scientific diagnosis of the species. This, I need hardly say, I much prize, as it comes from one that is an expert in the smaller and more abstruse forms of dipterous life, which he has made a special

study for many years. I have pleasure in forwarding Dr. Meade's notes on the subject.—PETER INCHBALD; Fulwith Grange, near Harrogate, May, 1886.

CECIDOMYIA MURICATÆ, sp. n.

Nigra; antennæ 17-articulatæ, mas et fœm., articuli, mas petiolati, fœm. sessiles; epistoma cirro albido ornatum; thorax nigrescens, vittis tribus atro-micantibus signatus, crinibus albidis lateribusque vestitus; humeri flavi; scutellum flavum baso nigrum; abdomen rufo-fuscum, albo-pilosum; apex cum forcipite pallidus, mas; oviductus elongatus tenuisque, absque lamellis in fœm.; pedes fusci, subtus albo-pilosi, geniculis tarsisque apice sanguineis; alæ cinereæ, nervo cubitali recto. Long. mas $1\frac{1}{2}$, fœm. $1\frac{3}{4}$ –2 mm.

Head, with forehead and occiput, black, clothed with white hairs; face brownish yellow, inner margins of eyes bordered by a yellow line; epistome furnished with a tuft of yellowish-white hairs; palpi pale yellow; antennæ blackish brown, seventeen-jointed in both sexes, nearly as long as the body in the male, about half the length in the female; joints petiolated in the former, sessile in the latter, verticillated with white hairs in both; joints and petioles about equal in length in the male along the proximal two-thirds of the antennæ, then decreasing a little in size, and becoming rather nearer together towards the end; in the female the joints lessen gradually in size towards the apex of the antennæ, the last joint being taper in form, and half as long again as the penultimate one. Thorax dark brown, marked with three broad, longitudinal, shining black stripes, which are confluent in front and become indistinct towards the back of the thorax; the sides are thinly clothed with white hairs, which form a small tuft in front of the root of each wing; a few scattered white hairs are arranged in two short longitudinal lines on the middle of the dorsum; the shoulder points are marked with a yellow spot; the roots of the wings are bright red. Scutellum black at the base and reddish yellow at the end and sides, from whence the same colour extends to the sides of the thorax and bases of the wings. Metathorax black. Abdomen of a uniform reddish-brown colour, darker in the male than female; the first segment is black, and in dried specimens the posterior margins of the segments are darkened; the edges and sides of the

segments are clothed with white hairs; the neutral surface is flesh-coloured (much brighter in the female), and has a broad interrupted brown band down the centre; the last two abdominal segments are narrowed in the male, and, together with the forceps, testaceous in colour: the oviduct in the female (when protruded) is long and slender without terminal lamellæ; it has the basal joint round and yellow, the second one elongated, furrowed, and brown, and the terminal one slender and pointed, half as long again as the second, pale yellow at its base, brown in the centre, and pale pink at the apex. Halteres brown, with the stalks pale at their bases, and with the knobs clothed with patches of white hairs. Wings covered with dark pubescence, cubital veins straight and joining the costal vein a good way in front of the apex of the wing; both these veins look thick, being clothed with scales, and have a reddish tinge; the lower branch of the anal vein forms a uniform graceful curve to the hind border of the wing. Legs brown, with the basal halves of the femora pale, and the knees with the ends of the tarsi pink; the under surfaces of the legs are thickly clothed with white hairs which gives them a shining silvery appearance.—R. H. MEADE; Bradford.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

VANESSA ANTIOPA IN THE NEW FOREST.—A good specimen of *V. antiopa* was seen on August 3rd, 1885, by Mr. Fynes Clinton, of Christchurch, who was accompanied by a friendly expert. It was first observed to settle among small birches on the Christchurch Road, between Lyndhurst and Holmsley; and on being disturbed it flew across an adjoining stream leading to a marsh, where it unfortunately got out of sight.—J. M. ADYE; Somerford Grange, Christchurch, May 19, 1866.

FURTHER NOTE ON *LYCENA ARGIOIOLUS*.—The communications made to the Entomologist this year on this interesting lepidopteron are very instructive. The subject was introduced by Mr. Harcourt Bath, pp. 13 and 29-33, followed by one by myself, pp. 50-52: these led to others, among which were notes from Mr. W. H. Harwood, pp. 88-89; from Mr. E. Sabine, p. 89; from Messrs. H. Goss, W. Farren, G. J. Grapes, and J. R. S. Clifford, pp. 122-123. These communications establish the fact,

which I believe no one disputes, that the insect is double-brooded, but the question still remains open, is it double-brooded in districts where the holly alone is found? The evidence that it is double-brooded in some parts of the New Forest is conclusive, but there are many large areas in that extensive tract, ten miles in length, where the ivy is not found; for instance, at Hinchleslea the holly is very abundant, and in the spring *Lycæna argiolus* is common. I have searched in vain for it in July and August, and having made a most careful examination all round the enclosure, I could find no ivy. Then I had the testimony of James, George, and Charles Gulliver, to the effect that in their experience the insect was not in the New Forest double-brooded. I may remark that Hinchleslea is quite isolated from the rest of the forest by a wide expanse of heath surrounding it. In the Rinefield Sandys district, where there is a considerable quantity of ivy, I have spent many weary hours in beating for the larva in autumn, but without success. It will be apparent that all this evidence was of a negative character, and I therefore forbore to publish it, and a reference to my communication will show that I have not written one word to the effect that *Lycæna argiolus* was not double-brooded in the New Forest, well knowing the great extent of the ground. The ivy climbs deciduous trees only as a rule. I have but once seen it on the holly; that was in my own garden under artificial conditions. Upon the whole, I am inclined to maintain my position that *Lycæna argiolus* is in England both monogoneutic and digoneutic, and should be very glad to have any further evidence of its single-broodedness. There are three other British species regarding which distinct evidence of a second emergence of the imago would be valuable, viz., *Argynnis selene*, *A. euphrosyne*, and *Euchloë cardamines*. I have never captured any of these insects in the autumn, but in the very wet summer of 1879 I took, in the New Forest, *Argynnis selene* on the 9th August, but I regard this as a case of retarded emergence.—J. JENNER WEIR; Beckenham, Kent, May 12, 1886.

LYCÆNA ARGIOLUS IN SOMERSETSHIRE.—In this district, where both holly and ivy are somewhat plentiful, *Lycæna argiolus* is generally distributed, but not abundant. During the four years that I have been in this locality I have always noticed it both in the spring and autumn. It usually makes its first appearance about the third week in April, and both sexes may be seen flying

over the holly when in bloom. It is also partial to the blossoms of the *Laurustinus*, but, as far as I have noticed, only for the sweets obtained therefrom. In August I have seen the females flitting over the ivy, and last season captured one on bramble blossoms, but it was only feeding on them. In parts of Dorsetshire also, on the chalk formation, I have also noticed it at two seasons of the year. I feel confident that in both these localities it is double-brooded. The last two seasons here it has been quite scarce, and up to the present time this season I have not yet seen it. In the early stage of its existence I think it is much preyed upon by those insect-loving birds the chiffchaff and willow wren. It will be remembered that Westwood as well as French entomologists mention *Rhamnus frangula* as one of its food plants.—T. B. JEFFERYS; Clevedon, April 27, 1886.

FOOD-PLANTS OF *MELITÆA ATHALIA*.—In his "Notes from Abbots Wood" (Entom. xviii. 265), Mr. W. F. Hawes speaks of *Melampyrum pratense* as the food-plant of the larva of *Melitæa athalia*, and I should very much like to know upon what other plants it has been found in this country. I believe that before my discovery of it on *Melampyrum*, in 1871, it was supposed to feed exclusively upon *Plantago lanceolata*; but since then I have also found it in abundance on *Digitalis purpurea*, and a single larva on *Teucrium scorodonia*. Last spring I could find no larvæ, though the perfect insects had been unusually abundant the previous season. The reason of my want of success was that the usual food-plants were absent, for, though I searched many acres, I could find no *Digitalis*, and only a couple of small plants of *Melampyrum*. In June I made a special journey to the locality to see whether the perfect insects would put in an appearance, and, somewhat to my surprise, found them almost as common as usual; but those which occurred over that portion of the wood where I had searched for larvæ were, with few exceptions, of little more than half the usual size; whereas in the part which I had not searched they were quite of the normal size, and there I found a fair quantity of *Melampyrum* growing. I conclude, therefore, that the small specimens were produced from larvæ which either fed up upon an insufficient supply of their proper food, or upon some substitute—possibly *Teucrium*—which did not nourish them properly, and that their inferior size was thus due to semi-starvation.—W. H. HARWOOD; Colchester.

ACHERONTIA ATROPOS AT GREENWICH.—On May 18th last one of my boys took a fine specimen of the above insect resting on some palings a few yards from the Greenwich Road.—C. LEVETT; 104, Malpas Road, Brockley, May 26, 1886.

ACHERONTIA ATROPOS.—As the past season has been so prolific in producing *A. atropos*, it may perhaps be interesting to relate a little incident which happened in a village near Saffron Walden, Essex, in the year 1876. A farm bailiff's cottage was luxuriantly covered by the nightshade (*Solanum dulcamara*), which in the autumn was all but stripped of the leaves by numbers of larvæ of *A. atropos*. The ignorant owner, after holding a consultation with the village people, came to the conclusion that it was a visitation of locusts, and set to work to kill the lot. After hearing of this I sent word to the man that he had done a foolish thing, as he might certainly have made a good profit by them. I saw him only the other day, and he was even then still lamenting his precipitation.—J. JAGER; 180, Kensington Park Road, W., May 22, 1886.

HYBERNATION OF DEIOPEIA PULCHELLA.—Has any one before made the observation as regards the hybernation of this insect? for besides the specimen noted last month (Entom. 127) by Mr. T. R. Sanders, as taken on May 25th, 1885, I can also record the capture of a specimen by myself on May 18th, 1878, at Bournemouth; and I particularly noticed at the time that it had a more faded appearance than those taken in the autumn.—J. M. ADYE; Somerford Grange, Christchurch, May 19, 1886.

[*Deiopeia pulchella* does not hybernate in the perfect state, but emerges from pupa in May. Specimens have previously been observed in England during May, and also in June, July, and August, though examples have been more frequently met with in this country in September and October. The species is probably not permanently established in Britain.—R. S.]

BOMBYX QUERCUS ON THE ISLAND OF HOY.—On referring to Mr. J. Jenner Weir's "Notes on the Lepidoptera of the Orkney Islands" (Entom. xv. 1), I am surprised to find that *Bombyx quercus* is not included among the list of captures on the Island of Hoy. It surely must have been overlooked. During the month of July last year, on the north end of that island, I found the larvæ of this species actually swarming on the heather; I

could very quickly have taken hundreds, had I felt so disposed. I am accustomed to take them very commonly here, but I never saw them so abundant as I did in Orkney. Our knowledge of the Lepidoptera of these northern isles apparently being so limited, I thought it might be interesting to add even so common a species as *B. quercus* to the entomological list of Hoy.—ARTHUR HORNE; 75, Rosemount Place, Aberdeen, N.B., May 6, 1886.

EMYDIA CRIBRUM IN DORSETSHIRE.—In the notes on Lepidoptera in Dorsetshire (Entom. 118), I notice *Emydia cribrum*, mentioned as “flying on the heath towards dusk.” As this is by no means a common insect, it may be of interest if I state that with a friend I took this insect freely last year on a Dorsetshire heath, but not towards dusk. All our specimens were captured in the heat of the day between 11 and 2, and we never once saw one later in the day.—JOHN LEA; 1, Claremont Terrace, Hampstead, May 20, 1886.

NYSSIA ZONARIA IN LANCASHIRE.—I have captured this year many specimens of *N. zonaria* on an old pasture at Crossens, near Southport. The larvæ (in this district) feed on knapweed (*Centaurea nigra*), not on yarrow, as stated in many works.—RICHARD COBY; Town Hall, Southport, May, 1886.

TEPHROSIA CREPUSCULARIA, *Hb.*, AND *T. BIUNDULARIA*, *Bork.*—In his notes on these species (Entom. 98), Mr. Tutt has very carefully followed the times of emergence of each in a state of nature, and to some extent bases his argument upon them; but, in addition to this, a glance at their behaviour in confinement may not be without interest, and will, I think, perhaps assist in reconciling the very opposite views held by some entomologists as to the possibility of distinguishing the one from the other by the markings and coloration of the imagines. *Tephrosia crepuscularia* is the earlier of the two to emerge in the spring, and ova are usually deposited by the end of March or the beginning of April. The larvæ feed up rapidly, and pupate by the end of May; a portion of these emerge during the following month, and form the summer brood, which is, as a rule, comparatively small, both in point of numbers as well as size; but the remainder lie over as pupæ until the following spring, before assuming the imago state. These are then among the first to appear, and are

generally of the warm brownish grey shade that Mr. Tutt describes; sometimes distinctly banded. I quite agree with him that these may be readily separated from *T. biundularia*; but the offspring of the summer brood, which emerge at about the same time as these, appear to me to come very much closer to *T. biundularia* in general appearance; and although the lines are, as Mr. Tutt suggests, perhaps not quite so sharply defined as in that species and somewhat darker in shade, the similarity is so great, even in bred specimens, that this character could hardly be relied upon, much less so in examples that had flown. The ova of *T. biundularia* are deposited from the middle to the end of May; the larvæ are not full-fed until the end of July, when they descend to the surface of the earth, and remain in pupæ until the following May, thus giving only one brood in the year. Unfortunately I have no notes of the markings of the larvæ of either species, but, as far as I remember, there is no great difference between them in this respect; but it may be worthy of mention that whereas *T. biundularia* fed readily on birch, *T. crepuscularia* would eat it only when reduced to the last extremity, and then very sparingly, and showed a decided preference to wild plum over all other foods offered to them. Whether our two species under discussion are of common origin—surrounding circumstances having induced an intermediate brood which became perpetuated, or, as would appear more probable from the comparatively restricted range of distribution of *T. biundularia*, local influences prevented, and in course of time altogether extinguished, the summer emergence—is a question upon which it is unnecessary to enter here; and, be that as it may, I see no reason at the present time for considering *Tephrosia crepuscularia* and *T. biundularia* other than distinct species.—R. ADKIN; Lewisham, S.E., May, 1886.

TEPHROSIA CREPUSCULARIA AND *T. BIUNDULARIA*. — I quite agree with the Rev. G. A. Smallwood (Entom. 39), that until more light is thrown upon the subject *T. crepuscularia* and *T. biundularia* cannot be definitely distinguished. I was told some years ago, by an entomologist of some authority, that we did not take *T. crepuscularia* in this locality, as it was a southern insect. Yet the concluding remarks of Mr. South (Entom. 101), point to the fact that both species usually occur in the same localities. Mr. Tutt gives March and April as southern dates for the appearance

of *T. crepuscularia*, and May and part of June for *T. biundularia*, the March and April imagos producing a second brood in July in the south (which is, I think, not an unusual thing with many early species). We have no second brood here that I am aware of, and if we take the standard works on Entomology, *viz.*, Newman's, Stainton's, &c., we know that they have been written with a southern experience of dates of emergence. As a rule, we generally reckon here for the first four or five months at the beginning of the year a month later for our appearances and work, and as we take our specimens of *T. biundularia* in early May (2nd), it will coincide with Mr. Tutt's April appearance. Again Mr. Tutt says *T. crepuscularia* may be distinguished "by its warm brown-grey markings, and *T. biundularia* by its black lines being more sharply marked," yet (Entom. vi. 127) we have a record of a black *T. crepuscularia* taken 27th April, 1872, in Staffordshire. He adds that he has some beautiful varieties of *T. biundularia* from this neighbourhood and Derby." Now I do not think Mr. Tutt's a fair test, because when one takes an insect commonly one usually sends a friend the pick of the lot. One would not think of sending him, say the pale brown or very indistinctly marked specimens, but good, clear, well-defined marked ones. What one wants to look at is a number of all shades, such as we take here, varying from brown, pale and indistinctly marked, and well-defined and sharply and clearly marked, to grey and suffused ones, nearly black, without markings; then we have a better guide. It is not fair to pick them out and call the brown-grey marked ones *T. crepuscularia* and the black lined ones *T. biundularia*. I have taken the second brood of this species in the New Forest in July—smaller, of course—and had specimens sent from the south, but still I fail to separate them, or see any perceptible difference from my own, and my series is not divided even now. To attempt to separate them by the figures in 'Newman's Moths' is a hopeless and difficult task. I got so mixed up with them that I finally give it up as a bad job. Perhaps Mr. Smallwood, like myself, does not possess that keen perception of these minute warm shades that other entomologists do; hence our difficulty. I think the best way to settle the difference would be for some of our able specialists in describing larvæ to have both northern *T. biundularia* and southern *T. crepuscularia* larvæ to rear and

describe. I find (Entom. 1873, vi. 386) a description given of two larvæ of southern *T. biundularia* by my friend Mr. Porritt, but nothing about *T. crepuscularia*. Perhaps some of our older entomologists will also give us a little of their experience, so that we may be able more readily to determine these confusing species with something like clearness, and in future to set some of our minds at rest.—JOHN HARRISON; 7, Gawber Road, Barnsley, May 13th, 1886.

TEPHROSIA CREPUSCULARIA AND *T. BIUNDULARIA*.—I should be glad if the casual remark of mine, referred to by Mr. Tutt, in his interesting paper last month (Entom. 98), leads to a full investigation of the question of these species. I have bred both insects, and made many enquiries from other entomologists, but so far I cannot find any clear and satisfactory characters by which they can be distinguished in the larval or perfect states. I have sought in vain for help from the books of Newman, Stainton, and others; and I should now like to quote such authorities as Hellins and Doubleday, to show how entirely this question remains open. On my consulting him about *T. crepuscularia* and *T. biundularia*, Mr. Hellins wrote to me as follows:—"Aug. 1st, 1884. I send some extracts from Doubleday to me, from which you will see that he could not separate the larvæ." The extracts from Mr. Doubleday's letters to Mr. Hellins are as follows:—"June 18th, 1859. I have got eggs of the pale *Tephrosia*, which have just hatched. Hope to settle the question between *biundularia* and *crepuscularia*. I believe they are distinct." "July 11th, 1859. Got a lot of larvæ of the pale *Tephrosia* (*biundularia*), but I cannot see any real difference between them and those of the darker one. Both vary a good deal, but I believe the species are distinct." "Sept. 7th, 1861. *T. lariciaria* of the old lists were the dark species, which appears earlier in the spring than the light one. *Crepuscularia* has a second brood . . . Some specimens of summer brood of *crepuscularia* very closely approach spring ones of *biundularia*." "Sept. 12th, 1861. After being bred in confinement for a year or two, all insects degenerate; and I have lately bred some very light specimens of *crepuscularia*, but feel convinced the species is distinct from *biundularia*." "Oct. 20th, 1861. The dark *Tephrosia* is far more difficult to procure than the pale one,

being very local in this country. It used to be abundant at Birchwood. I have never seen it from North of England, but it is plentiful in Scotland. *Biundularia* appears to be common throughout England; and near Manchester assumes a smoky appearance, and is sometimes very dark, but not at all like true *crepuscularia*." Mr. Doubleday writes again:—"Feb. 5th, 1863. There is still a mystery about them. I am firmly of opinion we have two species in Britain. Here (Epping) we have nothing but *biundularia*; they never have the ferruginous tint of *crepuscularia*. About Warrington *biundularia* occurs; but they get a dark smoky variety, totally unlike the Scotch *crepuscularia*. In the New Forest, Birchwood, &c., both species occur; but *crepuscularia* is always out three weeks or a month before *biundularia*." "Feb. 23rd, 1863. I have always considered the peculiar rusty freckling as one of the most striking characteristics of *crepuscularia*, which seems to be a very local species in this country." As Mr. Hellins says, in reply to a letter of mine reviewing the above extracts, "The *Tephrosia* question is evidently full of puzzles." I will only add at present that, although I can see a difference between the double-brooded (*crepuscularia*) and the single-brooded (*biundularia*), it is not at all the same difference as Doubleday found between "the pale" and "the dark" *Tephrosia*. I should say that *crepuscularia* is smaller, and has the second line followed by a more decided band of brown, while *biundularia* has blacker and more continuous lines, especially on the under side and on the hind wing. I should also say that the larva of *crepuscularia* is paler, almost putty-coloured, with yellowish spots on the claspers, while *biundularia* is redder and darker, with white spots on the claspers. But we want more definite differences than these; and they will, I think, be found in the egg state, if at all. I should be much obliged to Mr. Tutt, or any other entomologist, if he will send me eggs of the March and July *Tephrosia*, especially the latter.—G. A. SMALLWOOD; Willington, Burton-on-Trent, May 15, 1886.

WHAT IS CRAMBUS CONTAMINELLUS, *Hübner*?—So much labour has been expended the past four months on this insect that I will not weary the readers of the 'Entomologist' with speculative matter, but simply place before them the following very interesting and conclusive extract of a letter from Mr. W. H. B. Fletcher, of Worthing, written to me last month:—

"I have both Hübner (Zeller's copy) and Herrich-Schäffer. After careful study of the figures, I have come to a decision very different from Mr. Tutt. According to Staudinger, Hübner figures '*contaminellus*' three times:—fig. 59, as *contaminella*; fig. 364, as *immistella*; and fig. 442, as *inquinatella*. Now fig. 59 is a very good one of Mr. Tutt's species, male. Fig. 364, Zeller considers to be *angulatella*, Dup., = our *geniculeus*; to my eyes it looks like a var. *hortuellus*; I think we may dismiss the fig. from consideration. Fig. 442 is a very good one of the pale form of our Sussex *contaminellus*, female; but it cannot retain the name of *inquinatella*, as the species, so called, was earlier named thus by Schiffermüller, and figured (54) under that name by Hübner himself; Herrich-Schäffer's figures, 88 and 89, are our Sussex species, male and female. It results that Mr. Tutt's species retains the name of *contaminellus*, Hüb.; *inquinatellus*, Schiff., keeps its name; and Sussex (and Preston) *contaminellus*, Hüb., fig. 442, H.-S., 88 and 89, male and female, wants a name." The above extract so fully confirms my short paper last month, that I believe it effectually decides the question.—W. H. TUGWELL; 6, Lewisham Road, Greenwich.

EASTER-WEEK IN THE NEW FOREST.—Having for many years visited the New Forest later in the season, I was desirous of spending, this year, a week at Brockenhurst in the spring. On my arrival, April 24th, the weather was lovely; *Gonopteryx rhamni*, *Vanessa polychloros*, and *V. io* were to be seen frequently. In the Queen's Bower, on April 26th, I saw *Lycæna argiolus* in large numbers round the hollies and oaks; but as the former are very high there, it was difficult to obtain them, and I had to watch my opportunity when they flew from tree to tree, generally within reach. Only on one occasion, at Netley Abbey, on the ivy, in August, 1880, have I seen *L. argiolus* so plentiful. In the evening I repaired to the sloe bushes, near Brockenhurst Bridge, where I took a few *Aleucis pictaria*, which were just emerging; a series of *Eupithecia pumilata*, *Ligdia adustata*, *Anticlea badiata*, and *A. nigrofasciaria* (*derivata*); also some fine *Selenia illunaria*. Of Noctæ only *Teniocampa gothica* and *Pachnobia rubricosa*. Micros, *Depressaria yeatesiella*, *D. ciliella*, and *Sarothripus undulatus* (*revayana*); but that was my only chance, for in the night we had a terrific storm, and the next day my hunting-ground was transformed into a lake; it likewise turned very cold,

with east wind. Wading through the wet forest to a place called Butt's Lawn, I took six *Boarmia cinctaria* on the isolated trees among the heath; also *Eupithecia abbreviata*, sitting in company with several *Diurnea fagella*. *Eupithecia irriguata*, I regret to say, was not to be obtained, as the strong wind carried everything a long way after tapping the boughs. Occasionally a hibernated *Cidaria siderata* (*psitticata*) flew off, which could be more easily pursued than a *Eupithecia*. Although at the end of the week we had one or two more sunny days, not another *L. argiolus* was visible, where I had taken them before. I tried a night's sweeping on the famous heath at Hincheslea, without any success. As I was leaving *Ematurga atomaria* was just appearing, and I regretted I could not enjoy another morning's ramble across the beautiful heath between Queen's Bower and Brockenhurst.—J. JAGER; 180, Kensington Park Road, W., May 22, 1886.

REARING LARVÆ.—As the season has fully come, it may possibly be a help to some of your readers to hear of a method for larvæ rearing which I have employed for the last three years with very marked success. It may or it may not be new, but I have not yet met with it elsewhere, either in books or practice. My plan is simple and inexpensive. My materials consist of a number of bell-glasses, varying in diameter from 4 to 12 inches across the mouth; a large number of little glasses obtained from a chemist from 2 to 2½ inches long; a number of jam pots equal to the number of bell-glasses; some pieces of gauze or muslin to cover the mouths of the bell-glasses, and some fine earth baked to free it from all enemies to larvæ. The method is as follows:—When I get some larvæ I take a bell-glass, in size according to the number and size of the larvæ, and place it, mouth upwards, in a jam pot. I then put in some of the earth up to about an inch or inch and half in depth. If it is a small-sized glass I then put in one small bottle, pressing it down into the earth in the middle as far as it will go, and fill it with water. If a large glass is needed for a number of larvæ, or for several large ones, I put in two, three, or four little bottles. Into the bottle or bottles are then put some twigs or sprays of the food-plant, and the “rearing cage” is ready for the larvæ. Having tied down the gauze over the mouth of the glass, I place it on a table before a window, which is kept open a little when the weather permits. I

do not write this with the idea of presenting anything very original to the entomological world, but with the hope of helping the "younger hands" in this interesting branch of the science. My system (if I may call it one) has these advantages:—It is inexpensive (a sovereign can purchase sufficient materials to rear several hundred larvæ at one time, and with care they will last for years. The large open mouth of the bell-glass gives fresh air perpetually, and keeps the larvæ healthy and dry. The small water-bottles keep the food-plant fresh for days, and saves much trouble in changing it. The earth, being dry, receives and absorbs the excrement of the larvæ, thus preventing mould and unwholesome dirt accumulating; it is also then ready for those larvæ which pupate under ground, when they are full-fed. Besides the bell-glasses have this great advantage, they enable us to watch the habits of the various larvæ, and to gain an intimate knowledge of their economy. In fact, I have learnt more in this way than by reading ever so many of the published entomological works. In conclusion I may add that since I have reared larvæ in this way I have been successful beyond expectation, losing but a very small percentage while in the larva state. I always keep the different species in separate glasses, but have had as many as 150 in one large glass feeding at the same time, such as *Eriogaster lanestris* and *Melitæa aurinia*.—J. SEYMOUR ST. JOHN; Chalfont St. Peter, Slough, May 19, 1886.

[Mr. Seymour St. John makes some excellent suggestions in his above remarks. We may, however, add that if he had his water bottles standing in tin cylinders into which they would loosely drop, he could withdraw the bottles for refilling with water and food without disturbing the earth in which his pupæ are forming. The necks of the bottles should be plugged with blotting-paper round the food-plant stalk, otherwise it gives the larvæ opportunity for committing suicide by drowning, a tendency to which is very fully developed in some species. The neck of the bottle should be packed round up to the cylinder edge, also with paper, so as to allow the larvæ to easily regain the food-plant in case they fall therefrom. One to one and a half inches does not appear quite deep enough for the earth, but in this we suppose Mr. St. John is guided by circumstances. —J. T. C.]

EUROPEAN LEPIDOPTERA. — Mr. Alfred Jahn, Attorney, Rudolstadt, Germany, writes:—“Every year I breed various species of Lepidoptera of Germany and Dalmatia, and should be glad if you can induce any of your readers to communicate with me, with a view to my exchanging eggs, caterpillars, chrysalids, or imagines with them.” This we with pleasure insert, as another stepping-stone on the way to breaking down insular prejudice among British collectors of insects.—JOHN T. CARRINGTON; May, 1886.

APHILOTHRIX RADICIS, *Fab.*—I had the pleasure of taking several walks with my friend Mr. C. G. Barrett during his short stay in Plymouth in 1884, and on three occasions we found *Aphilothrix radicis* galls. The first time was at Radford on the 13th May, when on passing a grand old oak Mr. Barrett drew my attention to a swelling of the bark about three feet from the ground; the gall evidently was in a state of growth. I marked the spot, in my mind, with the intention of removing the galls. In September I duly visited the tree for that purpose, but was very disappointed to find, after a four miles' walk, that a woodpecker had forestalled me. On the 20th May we visited Mount Edgecombe Park, and in our route to join my wife and children at the keeper's cottage, near Picklecombe Fort, near which cottage Mr. Barrett observed another tree with two galls on it; these were between four and five feet from the ground. Again, on the 2nd June, in passing through the Walkham valley, we saw three or four galls on one fine old tree; these were over six feet from the ground. Knowing I should not walk so far again that season I removed them, and bred the gall-maker in April following. It appears by this that *A. radicis* requires one year to mature; this being the agamous form of *Andricus noduli* (= *trilineatus*), it would require two years to complete the cycle.—G. C. BIGNELL; Stonehouse, Plymouth, February 5, 1886.

SYNERGUS INCRASSATUS, *Hart.*—These inquiline I bred in April and May from galls of *Aphilothrix radicis*, taken on the 2nd June previously.—G. C. BIGNELL; Plymouth.

TORYMUS ERUCARUM, *Sch.*—This very handsome parasite I bred from the galls of *Aphilothrix radicis*, but cannot say whether they were parasites on the gall-makers or on the lodgers, *Synergus incrassatus*.—G. C. BIGNELL; Plymouth,

NEW WORK ON COLEOPTERA.—Entomologists will be glad to learn that the Rev. W. W. Fowler has placed in the hands of his publishers (L. Reeve & Co., London) the first portion of the MS. of his new work on the British Coleoptera. A large paper edition with coloured plates is also proposed, if adequate support can be obtained to justify the large outlay that must necessarily be incurred for artistic work. On enquiry, we find that already a sufficient number of subscribers for the illustrated edition, which will be limited to 250 copies, have sent in their names to make its appearance almost assured. In this work Mr. Fowler will have the assistance, as referees, of Dr. Power, Dr. Sharp, Dr. Mason, and Mr. Champion, so that this must surely be the coming standard work on British beetles; providing the drawing and reproduction of the figures are placed in experienced hands, and not spoiled by false economy.—[J. T. C.]

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. *May 5th*, 1886.—Prof. J. O. Westwood, M.A., F.L.S., Hon. Life-President, in the chair. Mr. William Saunders, the President of the Entomological Society of Ontario, was present as a visitor. The following were elected Fellows of the Society, *viz.*:—The Rev. E. N. Bloomfield, M.A., Mr. Frederick Fitch, Mr. A. J. Rose, and Mr. William E. Nicholson. Mr. Jenner Weir exhibited a large and spiny lepidopterous larva which he had received some years ago from the late Andrew Swanzy, who obtained it in Western Africa. Mr. Stevens exhibited a number of Coleoptera recently obtained in the Isle of Wight, including *Apion sorbi*. Mr. Crowley exhibited four specimens of *Leto venus*, a large moth belonging to the family *Hepialidæ*, from Natal. Mr. Howard Vaughan exhibited a long series of *Cidaria immanata* from Kent, Surrey, and other southern counties, Perthshire, Isle of Man, Isle of Arran, the Orkneys, and Shetlands. He also exhibited *C. russata* from various localities in the South of England, and from Perthshire, Argyllshire, and the Islands of Arran, Lewis, and Hoy. Mr. Vaughan further exhibited varieties of *C. suffumata* from Dover and Darlington. Prof. Westwood commented on the interesting nature of the exhibition of *C.*

immanata, and stated that he had never before seen such a wonderful collection of varieties of a single species. Mr. McLachlan exhibited, for Mr. G. Lewis, living specimens of *Paussus favieri* (Fairm.), lately collected in Portugal by Mr. Lewis. The Rev. W. W. Fowler exhibited *Staphylinus latebricola* and *Quedius truncicola*, both from the New Forest. The Secretary exhibited, for Mons. H. de la Cuisine, of Dijon, coloured drawings, life-size, of a variety of *Urania cræsus*, and a variety of *Papilio memnon*; and Prof. Westwood made some observations on them. Mr. G. Elisha exhibited specimens of *Antispila pfeifferella*, together with the cases, and the leaves mined by the larvæ. Mr. J. W. Slater read a paper "On the Origin of Colours in Insects," in which he showed that the assertions of Mr. Grant Allen, that all brightly-coloured insects were flower-haunting species, were incorrect; and that many brilliantly coloured insects were carnivorous. Mr. McLachlan said that the physiological question in connection with colour had not been paid attention to; he thought that colour in insects was to a great extent dependent upon the circulation of fluids in their wings. The discussion was continued by Prof. Westwood, Mr. Goss, The Rev. W. W. Fowler, Mr. Jacoby, and Mr. Weir.—HERBERT GOSS, Secretary.

SOUTH LONDON SOCIETY'S EXCURSIONS.—The first list of this Society's summer excursions is issued. They consist of five, and are:—May 29th, to Horsley, conducted by Mr. Windybank, leaving Waterloo Station at 2.32 p.m.; June 26th, to Bookham, conducted by Mr. Step, from Waterloo at 2.55; July 17th, Westerham, conducted by Mr. Carrington, from Charing Cross at 2.15; August 7th, Chobham (Virginia Water Station), conducted by Mr. Billups, leaving Waterloo at 3 p.m.; and September 4th, to Epsom, conducted by Mr. Chaney, leaving London Bridge at 2.18 p.m. These excursions are usually most instructive to those unacquainted with the various localities visited, and others than members may attend, as visitors, on introduction by a member. London or country readers who have not yet joined this Society should obtain particulars from the Secretaries, 1, Denman Street, London Bridge, S.E.—[J. T. C.]

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IS *DEIOPEIA PULCHELLA* PERMANENTLY ESTABLISHED IN BRITAIN?

BY REGINALD E. SALWEY.

HAVING been so fortunate as to take a fine specimen of the beautiful and rare *Deiopeia pulchella* on the 1st June this year in a meadow about $3\frac{1}{2}$ miles inland from Folkestone, in the presence of Messrs. F. L. Whitmore and W. Austen, I was about to record my capture in the 'Entomologist,' when my attention was drawn to a note by Mr. R. South (Entom. 157). He answers a query of Mr. J. M. Adye's with reference to the hybernation of *Deiopeia pulchella*, and adds that the species is probably not permanently established in Britain. I have never faced this theory before, and having so recently captured a specimen I am naturally anxious to have good grounds for retaining my old belief, that *D. pulchella*, although rare, has a real claim to a permanent place in our British list. To establish this claim is, unfortunately, out of my power, but to find some foundation for it is my present purpose.

In the first place, I know of no rarity amongst our Lepidoptera—perhaps excepting *Vanessa antiopa*—whose appearances, though erratic, have been so continuous throughout a period of many years. The back volumes of the 'Entomologist' prove this sufficiently, and I am personally aware of some specimens taken which have never been recorded; and doubtless there are many other instances. In some years the number recorded of specimens captured is quite considerable; at other times the record sinks to two, or only one, but that it is fairly continuous will, I hope, be admitted.

There is a popular belief, which has, rightly or wrongly, gained ground of late, that most rarities are blown across or accidentally conveyed to our shores from the Continent. I do not dispute the possibility of *Deiopeia pulchella* paying us a visit by the latter means; indeed, considering the quantity of fruit and flowers imported to England, it is a matter for wonder that we do not more often see continental species on our coasts; but to any one acquainted with the weak and uncertain flight of this moth, it must be obvious that a journey of thirty miles on the wing, even backed by a favouring wind, is a physical impossibility. Even allowing that a percentage of our known specimens are conveyed to England—and naturally we S.E. coast Entomologists have to bear the brunt of this doubt especially—we cannot account by similar reasoning for those taken on the Cornish, Devonshire, Suffolk, Lincolnshire, and Yorkshire coasts. Is it not probable that *D. pulchella* is a lover of any sea coast? and its food-plant (*Myosotis arvensis*) being universal, would not interfere with this supposition.

The late Mr. Sidebotham, writing to Mr. Tugwell (Entom. xi., 186), intimates that this species prefers the coast at Mentone, where, he says, "it is more abundant." Mr. Tugwell then confirms its partiality for the seaside in our own country, and I find (Entom. xiv., 157) a record of the capture of a specimen by Mr. C. B. Ussher, at Ardmore, Co. Waterford coast, Ireland. It is not my wish or intention to deny that by far the greater number of captures have been effected on our sea coasts, but it is my firm belief that this is a matter of habit and natural selection on the part of *D. pulchella*; and I am of opinion that the species is established and breeds in England, taking a coast line by preference.

My own specimen was taken, as previously stated, nearly four miles from the sea, but I find that on Oct. 1st, 1869, Mr. T. H. Briggs took one on a farm in the Alkham Valley whilst out shooting, within three-quarters of a mile of my locality (Entom. iv., 352), and on Oct. 28th, 1874, Mr. C. A. Briggs, his brother, took another on the same farm, and within a similar distance of my own capture. During the last twenty years many other specimens have been taken on our S.E. coast and around Folkestone and Dover; and may we not reasonably suppose that the Alkham Valley, and entire surrounding

district, inclusive of the above-named places, is a recognized locality for my prize, and that it has bred hereabouts from year to year without any continental influx of new blood? The food-plant is present in the field where my specimen got up, and Mr. T. H. Briggs's *D. pulchella* actually settled on a bank where *Myosotis* was growing.

Here are a few localities extracted from the 'Entomologist' which prove that this strange insect has sometimes sought a home well inland. The following "takes" are recorded:—Entom. iv. 352, at Usk, Monmouthshire; Entom. v. 80, near Reading; same vol., p. 412, Ipswich; Entom. viii. 226, at Biggleswaite, Bedfordshire; and p. 280, at Waltham Cross. I am also informed that Mr. J. T. Carrington and the late Mr. Prest, while out walking together, in the autumn of 1871, through a corn stubble field, near Acomb, Yorkshire, saw a specimen, but, having no nets, failed to secure it. There is an argument in favour of inland localities which may possibly have been overlooked. Say that a collector takes a *D. pulchella* on this or any other coast. In all probability he will not abandon the quest, but will follow the coast line with more or less fidelity in search of another specimen; this has certainly proved successful in past years. He rightly feels a certain confidence in persevering, and that the chances are in his favour. He is bounded by the sea on one side, and probably stimulated by the similar nature of the coast line before and behind him; but a collector at Repton or Biggleswaite has no such stimulus; all points of the compass are open to him, the magnitude of the task appears to be heightened, the prospect of success apparently diminished, and he abandons what he considers to be a hopeless undertaking. I am inclined to think that his further search would be nearly, if not entirely, as profitable as that of a dweller on the coast, and that a diligent walk over adjacent meadows and lanes, and the use of the cord swept across arable fields in the recognized way, would yield a good measure of success.

In conclusion I venture to attribute three reasons for the continued rarity of *Deiopeia pulchella*. First, the sluggish nature of the insect, which often will not take flight unless absolutely kicked up. Secondly, its apparent love of solitude in this country; in this way contrasting curiously with the allied species *Euchelia jacobaeae*, whose habits are entirely

gregarious. Thirdly, the nature of the food-plant, which, though common, is generally scattered over a wide area, and not easily swept or searched for the larva.

I live in hopes that entomologists will sacrifice a little time, now devoted to general entomology, during the months of May and October, to diligent working for the imagines of this beautiful species, and that a record of further captures will be forthcoming this autumn. May everything be done that is possible, in the future, to banish the last vestige of suspicion that *Deiopeia pulchella* is not a well-established British species!

1, Bouverie Place, Folkestone, June, 1866.

A CONTRIBUTION TO THE LIFE HISTORY OF *CHRY SOPHANUS SALUSTIUS*.

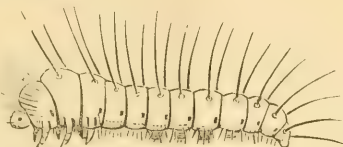
By G. V. HUDSON.

THIS is the commonest and most generally distributed of our butterflies, occurring everywhere throughout the islands, from November till April. It is consequently somewhat surprising that its transformations have not yet been observed, but this is, no doubt, owing to the great difficulty experienced in procuring ova. For upwards of three years I have been in the habit of enclosing specimens in a large caterpillar cage, and feeding them, in hopes that they would deposit eggs, but have invariably failed until last summer, when I obtained some quite unexpectedly. While collecting on the coast near here on February 7th I captured a worn female of this insect, which I intended keeping for eggs; on the way home the box got accidentally misplaced, and was not opened till several days later, when I was delighted to find that the butterfly had laid nineteen ova before dying.

These were semiglobose in shape, and very small, their greatest diameter being less than one-eighth of a line.

When first deposited they are of a light green colour, ornamented with a number of pale yellow reticulations, the surface thus resembling honeycomb when sufficiently magnified. In ten or twelve days' time the eggs hatched, having previously assumed a uniform dull yellow tint, the head of the embryo

being also plainly visible as a small black spot near the apex ; at this point a circular hole is afterwards drilled in the shell, through which the enclosed larva finally makes its escape. These larvæ are very minute, at first measuring barely half a line in length, and their thickness does not exceed that of the finest cotton. A careful microscopic drawing was at once made of the caterpillar, and is here given ; and the following peculiarities were noted.



YOUNG LARVA OF CHRY SOPHANUS SALUSTIUS.

The head is very small, of a dull brown colour, almost hidden above by the thoracic segments, which are considerably swollen, the rest gradually tapering off towards the anus, where they become slightly attenuated. The general colour of the larva is pale green, darker on the dorsal surface, where a pair of conspicuous black warts are situated, a long erect bristle standing up from each of these, and a number of smaller ones also taking their rise from the ventral and anterior portions of the insect.

I was, of course, quite ignorant as to the food-plant of *Chrysophanus salustius*, but dock and sorrel naturally suggested themselves as the most likely from the two allied British species (*Polyommatus dispar* and *P. phlæas*) feeding on these ; I accordingly tried the former plant, and was delighted, while watching one of the larvæ under the microscope, to see a dark green spot rapidly forming inside it, and, on removing the insect shortly afterwards I observed a minute circular hole eaten out of the parenchyma of the leaf. For about a week they progressed very well, only two deaths occurring during this period ; it was now evident that the first moult was taking place, as all feeding had ceased, and the larvæ assumed a very sickly appearance. Five died during the change, and one was accidentally killed, the number being thus reduced to eleven. I should here mention that the exuviae are not eaten by the larvæ after moulting. Circumstances compelling me to leave home at this time, it was

necessary to take them with me, one unfortunately escaping during the journey, but the rest underwent their second moult quite successfully. After this, growth proceeded very slowly, and it was not until about three weeks later that there was the least indication of change, four larvæ having died meantime without any apparent cause. The six remaining then sickened for the third moult, which they were all unable to perform, each one gradually drying up, although fresh leaves were constantly supplied. During the second stage the larva is considerably stouter than at first, a bright crimson dorsal line also appearing immediately after the first moult, at which time the anterior segments are much less swollen, and the bristles smaller in proportion.

I think that my failure in rearing these insects must be attributed chiefly to an error in the food-plant, as during the whole time I kept them they appeared to progress very slowly, and, although eating pretty well for such small caterpillars, increased but little in size, as though their food did not nourish them properly. The following table of dates indicates, I think, an unusually slow development for larvæ, almost in the hottest period of the year. Larvæ emerged February 19th to 21st. First moult, March 2nd to 6th. Second moult, March 19th to 22nd. Larvæ died, April 14th to 16th. Should I again be successful in procuring ova, I trust that by trying other plants I may be able to rear the insect right through, but it is impossible to decide on the original food of *Chrysophanus salustius*, as all the docks and sorrels have unquestionably been introduced with the grass-seed, and consequently spread throughout the country.

Oriental Bay, Wellington, New Zealand, April 24, 1886.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

PIERIS BRASSICÆ IN THE MIDLANDS.—For many years this butterfly has not appeared in greater abundance than it has during the last two—1884 and 1885. For several years past it has been gradually on the decline in point of numbers, and entomologists were becoming seriously afraid lest it should

become entirely extirpated. Great was their surprise, however, at the immense quantities of this insect which suddenly made their appearance in the autumn of 1884. Our gardens completely swarmed with them, and all kinds of vegetables were consumed indiscriminately by the multitude of caterpillars which were soon produced. The market gardeners were sorely distressed to know how to grapple with the foe, and numerous complaints found themselves from time to time in the local newspapers. As September began to draw to a close, so did the butterflies show signs of getting over, and when the 1st of October arrived nothing more was to be seen of them; but they left plenty of caterpillars behind them to commemorate their visitation. The larvæ were mostly all full-fed by the middle of October, and commenced at once to pupate under the projections of walls, palings, &c. At least half of them proved to be attacked by that deadly parasite *Microgaster glomeratus*, the golden cocoons of which appeared in the utmost profusion over walls and fences. The average number of parasites that attacked each individual victim was between forty and fifty. Numbers of caterpillars lived on through October, and many were not full-fed until somewhat near the middle of November. Such as these had either been hatched late or were sickly. The majority of these which had not sprung up by the end of October perished on account of the frosts which set in with vigour about that time. Notwithstanding all these enemies, the number of pupæ which survived was enormous. I counted on a wall not exceeding a dozen yards in length at least fifty or sixty of them. As I fully anticipated, the imagos appeared the next spring in proportionate abundance, and continued so throughout the summer. It remains yet to be seen whether the insect will be as numerous during the ensuing summer or otherwise. What was the cause of such a sudden appearance of this butterfly in such vast numbers, without having previously given any warning? Could it be through migration, or the cause of some hitherto unknown agent in facilitating its rapid multiplication? The weather in both the years 1884 and 1885 was comparatively favourable for its development, particularly so in the latter, which was unusually dry and warm. I am inclined to think that it is greatly regulated by both weather and parasite. It will be interesting to discover in what way the parasites themselves are affected by the weather. I should be

glad to learn if the unusual abundance of this butterfly in the years 1884 and 1885 was noticed by any readers of the 'Entomologist' in other districts, and what cause they attribute to such a phenomenal appearance.—W. HARCOURT BATH; Birmingham, February 15, 1886.

VARIETY OF *EPINEPHELE HYPERANTHES*.—Whilst collecting at Dorking, August bank holiday, 1885, I had the good fortune to secure a fine variety of this common butterfly. Instead of the upper surface being almost plain, there are three spots on each of the fore wings, very clearly defined; the two spots on both lower wings are as distinctly marked as on the under side of an ordinary specimen, each spot having a white pupil, then black, and finally circled by a very clearly marked amber-coloured ring, whilst on the under side all the spots are larger, brighter, and more clearly defined. The specimen is a female of large size.—ARTHUR J. ROSE; 11, Kyverdale Road, Stoke Newington, N., February 17, 1886. [Varieties of this species are mentioned at Entom. v. 201, 212, 226 (1870); and vi. 416 (1873).—ED.]

REMARKABLE VARIETY OF *LYCÆNA BELLARGUS*.—I recently visited a locality in Kent for *Lycæna bellargus* (*adonis*) to see if the spring brood occurred there, and found them unusually abundant. I have paid four visits altogether with one of my boys, and we have taken some examples of a form of *Lycæna bellargus* quite new to me, and I should esteem it a favour if you would kindly drop me a line to say if you are acquainted with it, or if it is well known. The male is a beautiful pale lilac or French gray in colour. We have taken five or six of them, and, to my great surprise, have also met with females to correspond. These are a very pale brown or fawn colour, clouded with pale lilac, and have beautiful pale orange spots; one of these is a perfectly fresh specimen, so there can be no question of fading. We also took a specimen of the black form of the male. First male was taken on June 7th, the second on June 10th, and five more on June 15th, when we also took the black variety. On this latter day I netted and boxed two very light females, which I did not examine until setting them out the next day, when I discovered them to be the corresponding females to the light form of the male. We went again on the 17th, specially to look for females, and took four more; saw another male, but the wind took it away. All were taken within the space of a couple

of acres, and most of them in one particular portion of ground, a few yards in extent. Both sexes are distinguishable at a glance on the wing, being totally different in colour to *bellargus*, or any other blue in appearance when flying. The spring brood was quite as numerous as *corydon* later on; and I hope to visit the spot again in the autumn to see if there is a later brood of *Cellargus*, and if the same pale form is to be met with. I would only add that I was as much surprised as pleased to meet with these varieties, especially with such a number of them, both sexes having occurred. I should fancy they are worthy a name.—E. SABINE; 22, The Villas, Erith.

MELITÆA ATHALIA AND NEMEOBIUS LUCINA, LOCALITY.—Perhaps some of the contributors to the Entomologist would kindly afford any information they may possess accounting for the noted peculiarity of this butterfly to localise itself in a few favoured woods in the South of England, though its undoubted food-plant, discovered by Mr. Harwood of Colchester (*Melampyrum pratense*, is generally distributed in this country. I may here mention that an attempt was made by Mr. Harwood to establish a colony of *M. athalia* in a wood about fifteen miles from one of its haunts in Essex, where its food-plant abounded; but though the insect fairly established itself for a few seasons, from some cause or other, after changing its habitat from one clearing to another in the wood, it disappeared, and has not since been seen in that locality so far as I am aware. The cause of its disappearance may have been due to crowding out by the rapid growth of the underwood. My experience of *M. athalia*, and doubtless that of others, is that it thrives best in those open spaces in woods where the young birches are few and far between, and where the flora which usually springs up after a clearance is luxuriant. It is useless to search the denser portions of the wood, even though adjoining the metropolis. Stragglers, however, may be taken in the ridings of the wood. Indeed I heard of an extreme instance in which a few stragglers were taken in a field at least five miles from their head-quarters. *Nemeobius lucina* is another butterfly with a similar tendency to localize itself, though its food-plant (*Primula vulgaris*) is common in most woods. I see it recorded in several works that *N. lucina* is double-brooded, but I have never known or taken specimens of

the second brood.—GEORGE J. GRAPES; 2, Buckleigh Road, Streatham Common, June 23, 1886.

DIMINUTIVE DIURNI.—Whilst walking through Uckfield, on the 6th May, I captured a remarkably small specimen of *Euchloë cardamines*. It measured just over an inch from tip to tip of the wings, but was quite perfect, and apparently only just out. Is not this a very small specimen, as the average span of wings of this butterfly is about $1\frac{3}{4}$ inches? Morris mentions one caught at Bishop-Auckland, which measures an inch and a quarter, but the one in question is even smaller than that by over the eighth of an inch.—S. MORRIS; Stoneleigh, St. John's Park, Blackheath.

SEX OF WINTER-FLYING BUTTERFLIES.—It is well known to entomologists that of the species hibernating as imagines several are apt to show themselves on the wing on bright days from November to March, retiring again to their winter-quarters, unless snapped up by some hungry bird; an event not uncommon, I imagine. *Gonopteryx rhamni* is one of these, and frequently I see it through the winter season along the lanes of Kent, and now and then in the midst of a wood, but never remember observing a female insect. I shall be interested in knowing if the observations of others agree with mine. In the case of such species as *Vanessa urticæ* it is not easy to ascertain the sex; but possibly it is only males that thus sally forth at an ungenial season.—J. R. S. CLIFFORD; Gravesend, Kent.

HETEROCERA IN HUNTINGDONSHIRE.—There are only a few resident entomologists in Huntingdonshire; therefore a list of specimens taken by me in 1885 may be useful. I should say it consists chiefly of captures in my own garden, which is about an acre in extent and planted with fruit trees. The number enumerated is not large, and includes only a few Noctuæ. Most of the insects were taken after business hours, and when enjoying the pleasantness of a garden in summer:—

In April, *Anticlea badiata* and *A. nigrofasciata* (*derivata*) occurred at dusk. In May there were *Bombyx quercus* (males), *Selenia lunaria*, *Amphidasys betularia*, *Hemerophila abruptaria*, *Melanippe sociata* (*subtristata*), *Cilix glaucata* (*spinula*) common, *Dicranura vinula* (bred), *Phlogophora meticulosa*. June produced *Sphinx ligustri* at privet flowers and honeysuckle (also bred), *Cherocampa porcellus* and *C. elpenor* at honeysuckle pretty abundantly. *Hepialus lupulinus* and *H. humuli* in

grass, *Zygæna filipendulæ* in meadows. *Spilosoma lubricipeda* and *S. menthastri* (twilight), *Lasiocampa quercifolia*, *Rumia luteolata* (*cratægata*) common, *Hemithea strigata* (*thymiaria*), *Acidalia aversata*, *Timandra amatoria* rather common, *Larentia viridaria* (*pectinitaria*), *Eupithecia linariata*, *Melanthia ocellata*, *Melanippe procellata*, *Scotosia retulata*, *Cidaria dotata* commonly, *Phalera bucephala* (larvæ on filbert trees, imagines common), *Aeronycta psi*, *Calamia phragmitidis* (brick hills), *Axylia putris*, *Agrotis segetum*, *Triphæna pronuba* common, *Cucullia umbratica* at honeysuckle flowers, *Nenia typica*. In July, *Smerinthus ocellatus*, *S. populi*, and *S. tiliæ*, *Macroglossa stellatarum* at flowers during the day, *Sesia tipuliformis* common on currant bushes early in the morning, *Nola cucullatella*, *Lithosia luridiola* (*complanula*), *L. griseola* and *Gnophria quadra* (male and female), *Euchelia jacobææ*, *Arctia caia* (larvæ common in garden), *Porthesia auriflua*, *Bombyx neustria*, *Odonestis potatoria*, *Uropteryx sambucaria* common, *Epione apiciaria*, *Pericallia syringaria*, *Halia rauraria* (*wavaria*), *Abraaxas grossulariata*, *Ligdia adustata*, *Lomaspilis marginata*, *Melanippe rivata* and *M. fluctuata*, *Camptogramma bilineata* everywhere, *Cidaria fulvata*, *Leucania impura*, *Xylophasia monoglypha* (*polyodon*), *Mamestra brassicæ* and *M. persicariæ* at sugar, *Triphæna interjecta* and *T. cones* (*orbona*), *Noctua plecta*, *Calymnia diffinis*, *Hecatera chrysozona* (*dysodea*), *Plusia iota*, and *P. gamma*. In August I took *Cossus ligniperda* rather commonly, *Orgyia antiqua* in daytime, *Triphosa dubitata* and *Scotosia rhamnata*, *Leucania pallens*, *Nonagria lutea* (lamps), *Agrotis puta* (sugar and lamps), *Plusia chrysitis* and *P. festuæ*, *Amphipyra trigopogonis* (sugar), *Mania maura* (old buildings). These occurred in September, *Chesias spartiata* (lamps), *Diloba cæruleocephala* very common at lamps, *Charæas graminis*, *Noctua c-nigrum* (sugar), *Gonoptera libatrix* and *Catocala nupta* (common at sugar). In October, *Acherontia atropos* commonly, *Cidaria miata*. And in November, *Pæcilocampa populi*.

Many of the above insects were taken in several months; I have not repeated their names but placed them in the month where they were most common.—HERBERT E. NORRIS, St. Ives, Hunts, June 4, 1886.

STRIDULATION OF SPHINX CONVULVULI.—A lady has just presented me with a very fine specimen of *S. convulvuli*, which, she tells me, she found at Groombridge at rest among ivy towards the end of September last. She remarked, that while killing the moth, which she did by placing it in a bottle with a few drops of chloroform, it uttered "loud squeaks," and "other distinct sounds, apparently of discomforture." I was not aware that *S.*

convolvuli possessed the art of emitting any sound whatever.—W. H. BLABER; Beckworth, Lindfield, Sussex, May 13, 1886.

CALLIMORPHA JACOBÆE IN APRIL.—A fine fresh-looking specimen of *Callimorpha jacobææ* appeared here on Easter Sunday, April 25th. Is not this a very early appearance for this insect?—EDMUND GARRATT GARDNER; May 14, 1886.

DEIOPEIA PULCHELLA IN GUERNSEY.—I am happy in being able to record the capture of this beautiful moth on the 1st of June on the cliffs here. There is, I think, only one other reported capture, which was in 1878, and reported in the 'Entomologist.' Until I had netted my prize I believed I was in pursuit of *Anaitis plagiata*, which moth it rather resembled in its manner of flight. Fortunately *plagiata* is scarce here, and therefore I was persistent in my endeavour to catch the white-looking moth, which was apparently so much at the mercy of the stiff breeze then blowing. A mile further on and more inland I took a second specimen. I have worked the neighbourhood industriously several times since, but have seen no more. The specimens are in very good condition and quite fresh, but paler than some continental specimens that I have seen. We are very late here this year. *Melitæa cinxia* did not make its appearance until the 21st of June.—FRANK E. LOWE; St. Stephen's, Guernsey.

ACRONYCTA ALNI IN SOUTH STAFFORDSHIRE.—On Sunday evening, May 9th, I captured a specimen of *A. alni* which had been flying about in my sitting room. Save that the thorax was just a trifle rubbed, the insect was in capital condition. I picked up a caterpillar of this species a few yards from my house about two years ago, but have not previously taken the perfect insect.—W. STEVENS; Tettenhall, near Wolverhampton, June, 1886.

PLUSIA PULCHRINA.—Kirby, in his 'European Butterflies and Moths,' says, respecting this insect, "Very like *iota*, but the fore wings more varied and more purplish, the silvery markings more sharply defined, and *always separated*." The latter remark would appear to be incorrect, for I have a nice specimen—taken here in 1884, in which the silvery spots are quite confluent. Is this an uncommon variety?—W. STEVENS; Tettenhall, near Wolverhampton.

HADENA RECTILINEA.—An old collector of this neighbourhood tells me he used to take this insect near here in the greatest abundance. It seems to be now quite extinct in its old haunts, not a single specimen having been seen for several years. I should be glad to know if this has been the case elsewhere?—A. E. HALL; Norbury, Pitsmoor, Sheffield, June, 1886.

LOBOPHORA VIRETATA.—Can any of your readers favour us with the result of their observations upon this insect? It is spoken of in all the books as feeding on privet. In the Midlands we find it in woods where no privet whatever occurs, and almost invariably associated with the holly, almost all my own specimens being found sitting on the trunks of hollies. I have taken it this season in three different woods, in all of which the holly is one of the most abundant trees, while privet is entirely absent from the locality, and sycamore, another suggested food-plant, occurs very sparingly. I kept several females for eggs, hoping to solve the difficulty, and two other friends did the same; but in no case was a single egg produced.—CHAS. F. THORNEWILL; The Soho, Burton-on-Trent, June 12, 1886.

TEPHROSIA CREPUSCULARIA AND T. BIUNDULARIA.—In defending the two species theory, Mr. Tutt and Mr. Adkin (Entom. 98, 158) seem to rely upon the slender evidence of a warm tint in *T. crepuscularia*. I am afraid even this will not hold good, for my own bred specimens of the double-brooded *T. crepuscularia* do not all possess that tint, but are some of them of a pure cold grey. On the contrary, *T. biundularia* (the single-brooded, May insect), which I have bred from eggs, have, many of them, a decided tinge of warm brown or rusty, other specimens varying from almost white to black, as black as *Tanagra atrata* (*chærophyllata*), with the subterminal line pure white. To attempt to separate such an extremely variable insect into two species, by the rule of some tint or shade, is, to say the least, an arbitrary proceeding. With as much reason it might be contended that the black *Amphidasys betularia* is a distinct species from the ordinary form of that moth. The distribution of these insects is an important point which has not yet been ascertained, as Newman admits ('British Moths,' p. 67), for the excellent reason that the species cannot be, and never have been, separated, with any authority. When Mr. South says (Entom.

101) that in England *T. biundularia* is generally found in the same localities as *T. crepuscularia*, does he mean that the records can be considered satisfactory, or to imply that the two insects are merely varieties? Again, when he says that *T. biundularia* is confined almost entirely to Germany and Britain, is not the answer obvious, that continental entomologists generally do not record it as a separate species? For it is strange indeed that an insect so widely distributed in Scotland and England should be so local in Europe. As for the difference in size, tint, and time of appearance, I believe it is entirely due to variation; and I have noticed that whole broods have often a common character of coloration. Some years ago I bred about twenty of the warm brown *T. biundularia* from eggs of one female, laid in the third week of May. And many instances might be named to show that moths, as they extend their range southward, undergo changes of colour and time of appearance, becoming in some cases double-brooded and smaller. Mr. Harrison's practical remarks (Entom. 159) strongly confirm my own opinion that the double-brooded *crepuscularia* is an exclusively southern insect, which point might be tested at once, as the moth comes out from the middle to the end of July. The view, therefore, that I take at present is that we have only one species, varying immensely in shade and colour, and that in the south, where the insect emerges so early as March, we have a degenerate second brood, or half-brood, in July, but that in the north it is uniformly single-brooded. In the south, the early brightly-coloured variety (*crepuscularia*) which gives birth to the second brood, has been held to be a distinct species, merely as an opinion, and without any foundation in fact, by Doubleday and some of his disciples. Referring to Doubleday's List (1873) I find three synonyms for *biundularia*. The first is "*biundularia*, Esp. (præc. var.)," the second, "*crepuscularia*, Haw (var. ver.)," and the third "*crepuscularia*, var. Gn." If I understand this aright, we have the overwhelming authority of Esper, Haworth, and Guenée, for saying that *T. crepuscularia* and *T. biundularia* are varieties only of one species, while Doubleday stands alone as the advocate of a second species. I should now like to recall attention to Doubleday's own words, which I quoted last month (Entom. 161), from which it appears that, though his opinion was in favour of two species, he could not support it by a single fact. I

conclude that, as no actual difference can be found in larva or imago, the two-species theory rests merely on tradition, and must be abandoned unless the eggs can be shown to be distinct. I should be much obliged for any that may be sent to me this month.—G. A. SMALLWOOD; Willington, Burton-on-Trent.

THE TEPHROSIA DISCUSSION.—It is satisfactory to find that my communication on *Tephrosia crepuscularia* and *T. biundularia* (Entom. 98) has called out such good matter as the notes of Mr. Doubleday, quoted by the Rev. G. A. Smallwood, and the experience of Mr. Adkin and others. There is certainly much similarity between the second brood of *T. crepuscularia* and the single-brooded *biundularia*, but the time of this second appearance aids us exceedingly in their determination. I think no one who has taken both species could possibly mistake the early brood. Of course I am speaking of typical specimens; the varieties must be judged by the date, season, and type occurring in the locality of capture. Mr. Harrison surely does not wish us to imagine that the time *T. biundularia* occurs in Yorkshire would be a month apart from the time of its appearance in Kent; that if an insect occurred in Kent say the first week of May, the first week in June would be a fair date for its appearance in Yorkshire. It does not seem reasonable. I can understand that the insects would be later in some seasons, while in others, with the temperature pretty well the same all over the country during the spring months, there would be but very little, if any, difference, and in seasons where *T. biundularia* has occurred in the south during the last fortnight of April, May 2nd would be a fair date for Yorkshire. I have information, however, that the insect occurs there generally, some three or four weeks later, and that only in early seasons is it found at such an early date. I am not surprised that a second brood does not occur in the Barnsley district, as the specimens obtainable there are *T. biundularia*, the single-brooded species. The type of the insect obtainable there is exactly the same as our Epping and Darenth forms, and my series from Barnsley contains these typical as well as indistinctly marked specimens, and is not made up entirely of well-marked varieties. I think the notes quoted by the Rev. G. A. Smallwood should be sufficient to convince Mr. Harrison that I do not stand alone in stating that *T. crepuscularia* has a brown-

grey and *T. biundularia* a white ground colour. I do not exactly understand the sentence, "It is not fair to pick them out," &c., nor what it is intended to convey. If Mr. Harrison has commenced a kind of sorting process of the Barnsley specimens I do not wonder he gets mixed up, as there seems little doubt that there is only one species obtainable there, endless as the varieties may be. Concerning the "black varieties" of *T. crepuscularia*, it is quite possible, and does not disprove what I suggested, that the varieties of this species are generally suffused with brown. To my mind it is possible to have a variety of any species, suffused to any degree with any of the colours present in the type. Black is present in typical *T. crepuscularia*, and hence this colour may be so developed to the exclusion of the others that a "black variety" is the result. But in *T. crepuscularia* the prevailing colour is brown, and varieties, principally brown in colour, are common; in *T. biundularia* the brown scales are but slightly developed, and give way to the white and black, and hence in this species black and dark grey specimens abound. When I wrote my last notes it was with the hope that our entomologists would take into account the time at which their specimens were obtained, and so give those to whom they sent their duplicates a better chance of a correct determination. Sending away doubtful specimens under a certain name without any explanation as to date, &c., means that the name will be accepted in many cases, and thus only makes a bad muddle worse.—J. W. TUTT; Rayleigh Villa, Westcombe Park, Blackheath, S.E., June 16, 1886.

THE TEPHROSIA DISCUSSION.—*Apropos* of the discussion relative to the distinctness of *Tephrosia biundularia* and *T. crepuscularia*, when a youth, residing in Lancashire, I remember that the older entomologists used to speak with pride upon the capture in Delemere Forest, in Cheshire, of an occasional black *Tephrosia biundularia*. At that time, say about 1857, or a year or two earlier, these suffused specimens were rare among the common light form, eagerly sought after, and even commanded high prices. They, however, became yearly more frequent; and when I last visited that fine collecting-ground the typical(?) or light-coloured form were comparatively rare, and there were plenty of dark forms. This was about 1873. Perhaps

Mr. Joseph Chappel, of Manchester, could tell us more about this change from white to black, which also obtains in another moth, throughout Lancashire and Cheshire, viz., *Amphidasys betularia*.—JOHN T. CARRINGTON; Savage Club, May 27, 1886.

LEPIDOPTERA AT SEVENOAKS.—I have captured the following species here at sallow bloom:—*Panolis piniperda*, *Pachnobia rubricosa*, *Tæniocampa munda*, *T. gracilis*, *T. pulverulenta* (*cruda*), *T. gothica*, *T. stabilis*, and *T. incerta* (*instabilis*); I have also taken *Heimerophila abruptaria*, *Tephrosia punctularia*, *Cidaria suffumata*, *Lobophora carpinata* (*lobulata*), *Xylina ornithopus* (*rhizolitha*), *Xylocampa aureola* (*lithoriza*); and *Anticlea nigro-fasciaria* (*derivata*), *Larentia multistrigaria*, and *Tephrosia crepuscularia* have been very common. On the evening of the 7th I found two *Notodonta trepida* and one *N. chaonia* at rest on one tree; and I have since taken another specimen of each.—LEWIS F. HILL; Sevenoaks, May 11, 1886.

NATURAL HISTORY OF CHISWICK.—I can now add one more to the list of Bedford Park Sphingidæ, namely, *Sphinx convolvuli*, of which a specimen was taken by F. Nash last summer; but there is no reason for supposing that it breeds in the neighbourhood. The Rev. O. P. Cambridge has been good enough to examine a bottle of Bedford Park spiders, and the following list of species contained may have some value, as giving a new locality for several species of this little-worked class:—*Clubiona terrestris*, Westr., *C. corticalis*, Walek., *Amaurobius similis*, Bl., *A. fenestralis*, Stroëm., *Tegenaria atrica*, Koch, *Linyphia bicolor*, Bl., *L. nebulosa*, Sund., *L. tenebricola*, Wid., *L. concolor*, Wid., *L. insignis*, Bl., *L. bucculenta*, Clk., *L. montana*, Clk., *Neriene nigra*, Bl., *Walckenaera cristata*, Bl., *Pachygnatha degeerii*, Sund., *P. clerckii*, Sund., and one of the Phalangiidæ, *Phalangium saxatile*, Koch. In the 'Spiders of Dorset,' *L. insignis* is stated to be rare in the South of England; but Mr. Cambridge writes that he finds it "common enough at Bloxworth now." F. M. Campbell (Trans. Herts Nat. Hist. Soc., vol. ii., pp. 263-276) states, that the common house spider in Herts is *Tegenaria guyonii*, and that *T. atrica* is extremely rare; and in various parts of the London district, *T. guyonii* is said to be the prevalent form. It is, therefore, interesting to note that all the Bedford Park examples that I have seen (and they are far from few) have belonged to

T. atrica, not one *T. guyonii* having hitherto occurred.—T. D. A. COCKERELL; 8, Priory Road, Bedford Park, Chiswick, May 7.

MOTH TRAPS.—Referring to the remarks made by Mr. H. King (Entom. 139)—Is not the reason of his not catching anything due to the moths flying to the larger light of the windows which were close by? A very good example of the same occurrence was told me by an old lighthouse-keeper of Hunstanton, a small village near Lynn, who says that thirty years ago so many moths, chiefly *Plusia gamma*, came round his light on dark nights that he was obliged to beat them away with a heavy stick; but since a new village has sprung up close to the lighthouse, and at the present time hardly any fly to the light. This seems to be because they are more attracted by the numerous, though not so strong, lights of the village, than by the single light of the lighthouse.—E. M. BELOE, jun.; King's Lynn, Norfolk. [Possibly our correspondent has offered, in his suggestion, the right solution of the failure of many who have tried the moth trap without success.—ED.]

MOTH TRAPS.—From divers remarks made in the 'Entomologist' on this subject, two things are essential to the trap being a success,—the first, and most important, being a suitable night; and the second, an extensive and uninterrupted view. The first may be easily remedied by trying the trap every night, so as to be prepared when the suitable evening does arrive; but without possessing the second it seems hardly worth the trouble to remedy the first. I should here like to ask those of your readers, who use Dr. Knagg's moth trap, or modifications of it, if the moths will remain therein till morning when captured; or if it is necessary to get up two or three times in the night to see if any moths have been captured, and if so, to box them? The advantage of Mr. Sabine's trap (Entom. 138) is that it is next to impossible for the moths to get out when they have entered it; whereas in that of Dr. Knagg's the ingress and egress appear to be equally easy.—A. E. HALL; Norbury, Pittsmoor, Sheffield.

REARING LARVÆ.—For some time I have adopted the plan advocated by Mr. Seymour St. John (Entom. 164), but with a little variation. As this may be of interest to some of your readers, I will, with your permission, explain my method. In the place of bell-glasses, which are rather costly, I purchase the

bottoms of these—that is, the parts cut off by glaziers to reduce the bell-glasses to saleable dimensions. All glaziers do not appear to keep these, but I have had no difficulty in meeting with them. The most usual size is about four inches in diameter, and the same height; and the charge for them is 2d. or 3d. each. I find little bottles filled with wet silver sand better for keeping the food-plants fresh than the same filled with water, and the advantage is that one is able to place them horizontally, and so avoid the danger of disturbing the earth, and do away with the necessity for tin cylinders. I have had four hundred or more larvæ feeding at once on this plan at a cost of not more than half-a-crown. The cylinder of glass can be placed or fitted on a flower-pot or jam-pot full of earth, and the habits of the larvæ are perfectly open to observation.—W. R. SCOWCROFT, The Quarry, Lathom, Ormskirk, June, 1886.

COLEOPTERA IN MIDDLESEX.—I was at Kingsbury (Middlesex) for three weeks at the beginning of June, 1885. Favoured with splendid weather I was very successful amongst the insects, especially Coleoptera. The locality seemed very favourable for beetles, and I obtained great numbers, both of genera and species. Amongst the captures were *Cicindela campestris*, *Notiophilus biguttatus*, *Elaphrus riparius*, several species of the genus *Carabus*, *Dyschirius æneus*, various *Dromii*, *Anchomeni*, *Pterostichi* and *Amaræ*, *Acupalpus exiguus*, *A. meridianus*, *Stenolophus vespertinus*, *Bradycellus harpalinus*, and *Bembidium articulatum*. The following Hydrophilidæ:—*Cymbrodyta ovalis*, *Philhydrus melanocephalus*, *Hydrochus angustatus*, *Sphæridium scarabæoides* and *S. marginatum*, and various species of *Cercyon*. In the Staphylinidæ I made numerous captures, including *Leistotrophus murinus*, which I found under patches of dry dung, and which, when disturbed, ran with great rapidity; *Pæderus littoralis*, and various species of the following genera:—*Aleochara*, *Tachyporus*, *Tachinus*, *Quedius*, *Ocypus*, *Philonthus*, *Stilicus*, and *Stenus*. Under various dead animals I captured *Creophilus maxillosus*, various *Cholevæ*, *Necrophorus humator*, *N. ruspator*, and *N. vespillo*, *Silpha rugosa*, *Hister cadaverinus*, *Saprinus æneus*. Sweeping was very successful; *Brachypterus urticæ*, *Meligethes picipes*, *Anisosticta 19-punctata*, *Coccinella septempunctata*, *Mysia 22-punctata*, various *Agriotes*, *Adrastus limbatus*, *Campylus linearis*, various *Telephoridæ*,

including *Malachius bipustulatus* and *Anthocomus fasciatus*, *Rhenosimus planirostris*, *Pyrochroa serraticornis*, several of the genus *Anaspis*, *Anthicus floralis*, numbers of Curculionidæ, including *Orchestes alni*, *Apion ulicis* (which was very abundant in the flowers of broom and gorse), *Rhychites æquatus* and *R. germanicus*, numerous Chrysomelidæ being swept from the hedges and herbage. In the Longicorns I obtained *Clytus arietis* by sweeping nettles, *C. mysticus* on rough palings, and *Grammoptera tabacicolor*, *G. ruficornis*, and *G. præusta*. In dung I captured, amongst others, *Onthophagus vacca*, *Aphodius erraticus*, and other *Aphodii*, and *Geotrupes stercorarius*. I obtained the following in marshy spots. *Trox scaber*, *Heterocerus laevigata*, *Priobium castaneum*, *Byrrhus pilula*, *Parnus auriculatus* and *P. prolifericornis*. I also got *Scolytus destructor* and *Bruchus seminarius*. My collecting was confined strictly to Middlesex.—J. HAROLD BAILEY; 48, Plymouth Grove, Manchester, May 14.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*June 2nd, 1886.* R. McLachlan, F.R.S., President, in the chair. The following gentlemen were elected Fellows of the Society, viz.:—Messrs. C. Baron-Clarke, M.A., F.R.S., H. Wallis-Kew, W. Dannatt, J. P. Mutch, B. W. Neave, A. C. F. Morgan, and Wm. Warren. The President announced that Mr. F. E. Robinson, a Fellow of the Society, and formerly a pupil of Prof. Westwood, had been killed by a tiger in India on April 27th last. Mr. Stevens exhibited a specimen of *Heydenia auromaculata* (Frey.), from the Shetlands, a species new to Britain. Dr. Sharp exhibited a number of species of *Staphylinidæ*, prepared by him some years ago with a view to their special protection and permanent preservation. The insects were placed in cells of cardboard, and these were covered above, or above and below, with cardboard, the whole being hermetically sealed by applications of successive layers of bleached shellac. The President said the plan appeared to be very successful where the cardboard cells were left open on both sides, but when the cell was complete below only one surface of the insect could be examined. Mr. Billups exhibited *Meteorus*

luridus (Ruthe), a species of Ichneumonidæ new to Britain, obtained by Mr. Bignell. Mr. W. White, in exhibiting cocoons of *Cerura vinula*, called attention to the vexed question as to how the perfect insect escapes from these solid structures. He was inclined to think that formic acid, secreted by the insect, was a probable factor in the operation. The question as to the mode of escape from these cocoons of the parasitic Ichneumonidæ and Diptera was also raised; and the President, Baron Osten-Sacken, Mr. Waterhouse, and Prof. Meldola made remarks on the subject. Mr. Elisha exhibited living larvæ of *Geometra smaragdaria* from the Essex marshes. He also exhibited the singular pupæ of *A. bennettii*. Mr. Howard Vaughan exhibited a series of several hundred bred specimens of *Peronea hastiana*, showing the innumerable varieties of the species. He also exhibited, on behalf of Mr. Sidney Webb, of Dover, an interesting series of *Cidaria suffumata*, with especial regard to the progeny of particular females, the parent and the produce of the eggs laid by her being carefully separated. Mr. Vaughan also read notes on the subject communicated by Mr. Webb; and Mr. Jenner Weir, Mr. Waterhouse, Mr. Distant, Dr. Sharp, and Mr. Stainton took part in the discussion that ensued. Mr. A. G. Butler communicated a paper on "New Genera and Species of Lepidoptera-Heterocera from the Australian Region," in which 21 new genera and 103 new species were described. Mr. J. S. Baly communicated a paper on "Uncharacterized Species of *Diabrotica*."—HERBERT GOSS, *Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*May 6th*, 1886. R. Adkin, F.E.S., President, in the chair. Messrs. F. Enock, F.E.S., and C. Brady were elected members of the Society. Mr. Elisha exhibited a bred series of *Antispila pfeifferella*, Hb., together with specimens of the mined leaves, and the pupæ-cases cut out from the leaves. With reference to his exhibit, Mr. Elisha stated that there was a note, in one of the early volumes of the 'Entomologist,' in which it was stated that the larvæ of this species pupated under the surface of the earth. This season he had bred some hundred or two of the insect, and he found that they all placed their cases among the decaying leaves. Mr. Wellman exhibited *Cidaria suffumata*, Hb., including two of the Dover form; a fine bred series of *Pygæra*

pigra, Hufn., and also *Adela cuprella*, Thnb., taken this spring on Wimbledon Common. Mr. Mera, *Aleucis pictaria*, Curt., of this season. The President exhibited a long series of *Endromis versicolor*, L., and said that in March, 1884, he received twenty-five ova from Mr. Gibb, the parent moth having been inbred, originally, from Rannoch specimens. In due course the larvæ fed up, and the first moth, a female, emerged on April 19th, 1885, and was followed by eight others, all females. This year he had bred twelve males; and he thought it worthy of notice that the first year he should breed all females, and this year all males. His observation only applied to a portion of the brood, and it would be interesting to ascertain how the remainder emerged. Mr. Carrington contributed notes and observations on a recent visit to Selborne, the home of Gilbert White.*

June 3rd, 1886. R. Adkin, F.E.S., President, in the chair. Mr. Percy Rendall was elected a member. Mr. Tugwell exhibited a varied series of *Spilosoma menthastri*, Esp., bred from eggs received from Hartlepool; also a specimen of *Anosia archippus*, Fab., taken on 21st September, 1885, at Trevilly, by Mr. Harris Saundry. Mr. Sheldon exhibited two specimens of *Stauropus fagi*, L., series of *Eupithecia pusillata*, Fb., and *Retinia turionana*, Hb. Mr. Wellman, varieties of *Cidaria truncata*, Hufn.; living larvæ of *Eugonia autumnaria*, Wernb.; *Acidalia emarginata*, L., and *Epione apiciaria*, Schiff. Mr. W. A. Pearce, *Nemophora swammerdamella*, L., Sta. Mr. West, of Streatham, preserved larvæ of *Eubolia cervinaria*, Schiff, and *Xanthia citrigo*, L. Mr. Shearwood, a number of preserved and mounted larvæ, among which were *Phorodesma smaragdaria*, Fb., and *Aciptilia galactodactyla*, Hb.; and Mr. Adkin, four specimens of *Saturnia pavonia*, L., bred from a nest of gregarious larvæ taken at Chatterdean on elm, and which had been fed upon hornbeam, the colours of the imagines being particularly rich and bright. Mr. Billups exhibited a specimen of *Paussus favieri*, Fairm, found in nests of the ant, *Pheidole megacephala*, at Portugal.

June 17th, 1886. The President in the chair. Messrs. A. T. Storey and A. Eland Shaw were elected members. Mr. Jager

* These notes are more fully set forth in the 'Field' newspaper of May 15th, 1886, p. 639.

exhibited *Erastria venustula*, Hb., from Horsham. Mr. E. Cook, *Heliaca tenebrata*, Scop., and *Emmelesia albulata*, Schiff. Mr. Sheldon, forms of *Hepialus lupulinus*, L., and bred series of *Earias chlorana*, L., and *Crambus chrysonuchellus*, Scop. Mr. Frohawk, *Acontia luctuosa*, Esp., from Cudham, and the life-history of *Cidaria silaceata*, Hb. Mr. Wellman, *Nemeobius lucina*, L. Mr. W. A. Pearce, *Pygæra pigra*, Hufn.; also *Cucullia verbasci*, L., from larvæ found at Mickleham. Mr. J. T. Williams, *Acronycta alni*, L., and a fine series of *Aphomia sociella*, L., bred from the cluster of cocoons found by him under a stone in his garden at Foots Cray, and which were exhibited by Mr. Billups at the meeting of the Society held on the 15th April last. Mr. Billups exhibited large groups of the larvæ of *Hyponomeuta padellus*, L., which he said he had received from Gravesend, and he understood that an enormous amount of damage had been caused by these larvæ to the whole of the apple orchards in Kent and Oxfordshire. A discussion then took place as to the probable cause of the large number of these larvæ, and the best means of exterminating them, in which Messrs. Adkin, Tugwell, J. T. Williams, Chaney, Wellman, W. West, and others, took part. Mr. Billups also exhibited the following Ichneumonidæ, bred by Mr. Elisha: *Colastes braconius*, Hall, from *Lithocolletis spinicollata*, Kol., Sta.; *Apanteles bicolor*, Ns., from *Lithocolletis lantanella*, Schr., Sta.; *Limneria interrupta*, Gr., from *Sericoris euphorbiana*, Frr.; also *Mesoleius sanguinicollis*, Gr., and *Pimpla brevicornis*, Gr., both bred by Mr. Wellman from *Gracillaria stigmatella*, Fb., Sta.; and he also exhibited two species of *Tenthredinidæ*,—*Ailantus viennesis*, Schr., and *Hylotoma cæruleipennis*, Ktz., taken in copula at Hayling Island on the 7th June.

Meligethes exilis and *Anthicus schaumi* were mentioned in the report of this Society's meeting of February 18th, 1886 (Entom. 94), as being from Lincoln, whereas they were received from a correspondent at Lincoln, but were taken elsewhere.—H. W. BARKER, W. A. PEARCE, Hon. Secs.

JOHN ARTHUR POWER, M.D.

Born, 18th of March, 1810.

Died, 10th of June, 1886.

A good man; a true lover of nature; an enthusiastic coleopterist. Possessing great store of entomological knowledge, and placing it freely at the disposal of others. A genial and warm-hearted friend.



Believe me yrs ever
Wm A Poway

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JOHN ARTHUR POWER.

JOHN ARTHUR POWER was born on the 18th March, 1810, at Market Bosworth, in Leicestershire, where his father, Dr. John Power, practised as a medical man; whilst his grandfather, also Dr. John Power, was a medical practitioner at Lichfield. He inherited his taste for botany and entomology from his grandfather, with whom he collected specimens when quite a boy. Dr. John, the father, having removed to London, John Arthur was sent to the Merchant Taylor's School, whence he proceeded, with a Scholarship, to Clare Hall, Cambridge, where two of his uncles were already Fellows,—Joseph Power, 10th Wrangler in 1821, afterwards Fellow and Tutor of Trinity Hall and University Librarian; and Alfred Power, 2nd Classic in 1826, afterwards Fellow of Downing, Vice-President of the Local Government Board in Ireland, and now K.C.B.; whilst a cousin, John Power, 8th Wrangler in 1841, was afterwards Fellow and Tutor and ultimately Master of Pembroke.

John Arthur Power took his B.A. degree in 1832, as 27th Wrangler, and at the top of the third class in Classics. Amongst those who graduated in the same year were Dr. Cookson, the late Master of Peterhouse; Dr. Thompson, the present Master of Trinity; the late Dean Alford, of Canterbury; Bishop Harold Browne, of Ely and Winchester; Thomas Webster, of Patent-law renown; Robert Potts, the Euclidian; and Richard Shilleto, the consummate Greek scholar. Though not so brilliant as that of his relatives, John Arthur Power's

success in the Schools sufficed to gain for him a Fellowship at Clare. He proceeded in due course to the degree of M.A., joined the Cambridge Philosophical Society, and commenced the study of Medicine at Addenbrooke's Hospital. There was at one time an idea of his taking part in scientific exploration in the East, and with this view he combined with Medicine the study of Hebrew and Arabic.

In his undergraduate days, Power did something in the way of entomology, but only in desultory fashion. In 1832 or 1833, James Francis Stephens and he made an excursion to Holme Fen, with the result that in one day the former captured thirty, and the latter twenty-seven specimens of *Lycæna dispar*. Possibly the veteran Mr. Frederick Bond may, in his early days, have rivalled this performance; if not he, no other British entomologist remains who can recount a like experience of the extinct Large Copper. About 1834 or 1835, Power began collecting Coleoptera with greater assiduity, and investigated the fen district with considerable success. The first entry in his journal is, "Burwell Fen, June 11th, 1835;" but his capture of *Dromius quadrisignatus*, at Cambridge, is mentioned in a paper of Prof. Babington's, read before the Entomological Society on the 7th July, 1834 (Trans. Ent. Soc. i. 85).

In May, 1841, he married Miss Helena Margaret Jermyn Jermyn, daughter of the Rev. Dr. Jermyn, a gentleman of repute as a herald and genealogist, whose forty MS. volumes of history of the chief Suffolk families are (I believe) preserved in the museum at Bury St. Edmund's. The elder sister of Mrs. Power was married to the late Sir Walter C. Trevelyan; and her brother, formerly Archdeacon of St. Christopher's and late Bishop of Colombo, is now Bishop of Brechin.

In those days, a College Fellowship was forfeited by marriage. Power came to London, and settled near his father, now well-known as an obstetric physician, in Nelson Square, Blackfriars, where he lived for nine years; and whence he removed to the house in Burton Crescent, which continued for thirty years to be a rendezvous for British Coleopterists. He was never in active medical practice, though he succeeded his father as medical officer to the Sovereign Life Insurance Office; but, in conjunction with his younger and only brother, Dr. W. H. Power, down to the death

of the latter in 1877,* he was a most successful medical lecturer and tutor, principally for the Army and Indian Departments. This he continued until a severe paralytic stroke, in January, 1882, compelled him to retire.

Power was elected a member of the Entomological Society of London on the 2nd June, 1834 (Proc. Ent. Soc., 1834, p. xxiv, where "Queen's Coll." is a mistake for Clare Hall); and his name appears in the list of members to the end of 1843, soon after which he resigned his membership. I cannot find that he ever contributed to the Society's 'Transactions'; but from 1855 onwards, there may be found in the 'Proceedings' numerous records of the exhibition by him or on his behalf of species of Coleoptera and Hemiptera which he added to the British lists.

He was chosen a member of the Entomological Club at a meeting held at William Spence's house on the 20th December, 1856; and they who, during the following five and twenty years, have had the privilege of joining those social gatherings, will not need to be reminded what an acquisition to the Club the cheery little Doctor was,—full of chat and anecdote, and invariably producing from his pockets some new British beetle, or some scores of specimens of a kind for which others had sought in vain, or had thought themselves lucky to bring home a solitary one. The last of those pleasant meetings which he attended (and the present writer never saw him afterwards) was at Mr. Grut's house, on the 30th November, 1881.

Disabled in the following year, he withdrew to Bedford, where some of his family were already settled. Writing in September, 1882, he gave the following account of himself:—"I lead a very quiet life at this out-of-the-way place, and am slowly recovering my powers of motion. My mental functions are quite restored, though they were in very bad condition for some time. I can now walk four or five miles, dress myself, feed myself, and all that; but my right hand is yet stiff and numb. I *can* write with it, but much better with the left." In the following March he wrote again:—"Just now I am completely upset by an accident. I trod on my dressing-gown in going down stairs, and fell head foremost nearly from top to bottom. I thought I was smashed, but found no great damage done

* An obituary notice of Dr. W. H. Power will be found in 'The Lancet' of the 10th March, 1877.

beyond a considerable amount of shake and bruise, which for the present puts me quite *hors de combat*, and with muddled brain; but I have no doubt that I shall recover in a few days."

Debarred from the active pursuit of entomology, he amused himself with his garden and greenhouse. When an entomological friend paid him a visit, his old ardour revived; it was soon seen that his intellect was unclouded, and his memory as retentive as ever. He was never happier than when discussing the minute points of difference between obscure and closely-allied species, which he probably had not seen for years, and recounting when, where, and how he captured them.

He died at Bedford, suddenly, on the morning of the 9th June, 1886;* leaving a wife, two sons, and six daughters. One son is in South America, one daughter in India; but the majority of his children, not unattended by grandchildren, were around or near him during the closing years of his life. Entomologists were represented at his grave by the Rev. W. W. Fowler and Mr. Grut.

It is curious that Dr. Power was upwards of forty years of age before he became the ardent collector that the existing generation have known him. "The indefatigable Power," was Newman's description of the man to whom he dedicated the second edition of 'The Insect Hunters;' and, during the thirty years that preceded his paralytic stroke, the Doctor was indeed indefatigable, and was without exception the most energetic and successful collector in the kingdom; at first of Coleoptera alone, but latterly of Hemiptera also. It would be interesting to know how many species he added to the British list; but perhaps this was not his strongest point. It was his speciality to be able to divine the spot where some rare and little-known species was likely to be found, to guess intuitively what would be its habits: he would make up his mind to go and find it; and find it he usually did, often in abundance, where others searched in vain. As an instance of the way he went to work, I may refer to his capture of *Drypta emarginata*. Somebody produced a specimen at one of the Entomological Club meetings, and the Doctor was twitted that

* The date is given, *ante*, p. 192, as the 10th June; and in Ent. Mo. Mag. xxiii. 44, as "Thursday, June 9th." But Thursday was the 10th. I have before me a letter announcing his death "this morning," which is not only dated on, but bears the post-mark of, June the 9th. I think the post-mark settles the question.

he had never taken it:—"Well, I will go and get it," was his reply. And go he did, to Portsmouth and back, five times; thus travelling (say) 1000 miles, to obtain this single insect, the result being the "fine series" of *Drypta*, mentioned in Proc. Ent. Soc. 1857, pp. 70, 90. Power's energy and perseverance were unbounded,—he would go on until he did succeed; and he seldom rested until he had captured a sufficient number to supply the wants of all his friends. His liberality was without stint; his knowledge was freely imparted, and he was ever ready to help and encourage a youngster; in giving away specimens by the score, that must have cost him many a tedious hour to set and arrange, to say nothing of the journeys—to all parts of England, Wales, Scotland, and Ireland—which he had undertaken to capture them, his generosity was conspicuous.

It would be easy to raise a laugh at the wiry active little man,—regardless of appearances, and oblivious of all but the immediate object of his quest,—perched at the top of a rotten willow-tree; crouching for hours together in a ditch; standing up to the knees in a river, scooping the water upon the bank with his hand; poking about in ants'-nests, with string round his wrists and ankles; trotting off with a blacking-bottle and a bit of meat to set a cunning beetle-trap; or coming home at night with his hat full of *débris* from the bottom of a haystack, and scarcely waiting to sup before the contents were emptied on the dining-room table for careful examination. But there was such a genuineness and heartiness about him, and about all his ways, that none could fail to revere and honour him. His enthusiasm silenced the scoffer; his earnestness compelled respect.

It is as a collector that Dr. Power will be remembered. I do not know that his knowledge of entomological science, or of the literature of the subject, was pre-eminent; with the exception of *Zeugophora turneri*, I am not aware that he ever described an insect. His published writings consist only of short notes in the periodicals of the day. After the death of Edward Newman, Dr. Power gave valuable assistance in editing this Magazine, commencing with the tenth volume; but it is believed that the following list contains all that can be attributed to the Doctor's pen:—

1. Notes on the Genus *Haliplus*. Zool. xiv. 5174 (1856). This contains a notice of the capture of species belonging to other genera, previously unrecorded as British.

2. Notes on Myrmecophilous Coleoptera. Report of British Association, 1858, p. 129. Zool. xvi. 6287 (1858).
3. Capture of *Polystichus fasciolatus* in Sussex. Zool. xvii. 6791 (1859).
4. Determination of *Philonthus prolixus*, a Brachelytron new to the British Fauna. Zool. xix. 7325 (1861).
5. Capture of *Mycetophagus quadriguttatus*. Zool. xix. 7325 (1861).
6. Note on two new Brachelytra. Zool. xix. 7530 (1861). *Oligota apicata*, Er., and *Bledius crassicollis*, Er.
7. Capture of two Coleopterous Insects new to Britain. Zool. xx. 8300 (1862). *Aphodius zenkeri*, Er., and *Tachyusa coarctata*, Er.
8. *Sirex gigas* an Enemy of the Hive-bee. Zool. xxi. 8343 (1863).
9. Description of a new British *Zeugophora*. Zool. xxi. 8735 (1863). *Z. turneri*, Power.
10. Capture in Scotland of a *Cis* new to Britain. Zool. xxi. 8792 (1863). *Cis lineato-cribratus*, Mellié.
11. Coleopterous doings in Kent and Devonshire. Zool. xxi. 8793 (1863).
12. Occurrence of *Catops colonoides* of Kraatz in Britain. Zool. xxii. 8997 (1864).
13. Captures of rare Coleoptera. Zool. xxii. 8998 (1864).
14. Occurrence of an *Ennearthron* new to Britain. Ent. Mo. Mag. i. 138 (1864). *E. fronticorne*, Panz.
15. Capture of *Quedius truncicola*. Ent. Mo. Mag. i. 138 (1864).
16. Capture of *Oligota flavicornis*. Ent. Mo. Mag. i. 139 (1864).
17. Occurrence of a *Cryphalus* new to Britain. Ent. Mo. Mag. i. 212 (1865). *C. tilia*, Fab.
18. Description of a Genus and Species of Brachelytra new to Britain. Ent. Mo. Mag. i. 222 (1865). *Borboropora saulcii*, Kraatz.
19. On some new and rare species of British Coleoptera. Ent. Mo. Mag. i. 235 (1865).
20. Captures of Coleoptera during the past winter. Ent. Mo. Mag. i. 260 (1865).
21. Fifteen species of Coleoptera new to the Reigate district. Proc. Holmesdale N. H. Club, 1865, p. 5.
22. Seven species of Coleoptera new to the Reigate district. Ibid., p. 8.
23. Revision of the Genus *Necrophorus*, as far as regards the British species. Entom. ii. 197 (1865).
24. Captures on the Birch Wood day. Entom. ii. 269 (1865).
25. Turner's Coleopterous captures: a new *Anobium*. Entom. ii. 270 (1866). *A. nigrinum*, Sturm.
26. *Atomaria ferruginea* and other Coleoptera at Birdbrook. Entom. ii. 322 (1865).
27. *Dromius fasciatus* at Littlington, near Royston. Entom. ii. 323 (1865).

28. *Ceuthorrhynchus suturalis* of Fabricius on the Welsh Coast. Entom. iii. 13 (1866).
29. *Hydroporus neglectus* of Schaum discovered in Britain. Entom. iii. 43 (1866).
30. Re-discovered or new British Coleoptera: *Nemosoma elongatum*, *Hydroporus neglectus*, *Helophorus nanus*, *Phytobius quadrinodosus*, *Ilybius subæneus*, &c. Entom. iii. 77 (1866).
31. Note, on the cocoon of a *Curculio*. Entom. v. 372 (1871).
32. *Doryphora decemlineata*. Entom. x. 101 (1877).
33. A Contribution to the Entomology of Ireland. Entom. xi. 2 (1878).
34. A List of new species of Coleoptera which have been added to the British Fauna during the years 1872 and 1877 inclusive, with Notices of the principal changes of Nomenclature of others; being a continuation of the Catalogue contained in the 'Entomologist's Annual' of 1872, up to December 31st, 1877. Entom. xi. 62 (1878).
35. The British Hemiptera-Homoptera. Entom. xi. 71 (1878).
36. Note, on distinguishing *Latheticus oryzæ*, *Læmophlæus pusillus*, and other species found in granaries from truly British insects. Entom. xiii. 95 (1880).
37. Note, Localities, &c., of *Hydroporus oblongus*, *H. latus*, *Cybister ræseli*, *Agabus striolatus*, and *A. tarsatus*. Entom. xv. 203 (1882).
38. Note, Habits and Localities of rare Water-beetles. Entom. xv. 212 (1882).
39. Review of 'Catalogue of British Coleoptera. By Rev. W. W. Fowler and Rev. A. Matthews.' Entom. xvi. 95 (1883).

A reverend gentleman, who knew him well and long, has written:—"It was my great privilege to know the dear old Doctor intimately; certainly there is no one for whom I had more real respect, admiration, and affection than for him. The remembrance of happy St. Pancras days comes back to me whilst I write this. I can hardly realise the family circle without his cheery face,—always bright, always kind, and, as it seemed to me, always happy. When I used to see him with his favourite collection of the 'little things of God,' those lines of Coleridge used often to come into my head, and became in my mind always associated with the Doctor:—

'He prayeth best who loveth best
All things both great and small,
For the dear Lord who loveth us
He made and loveth all.'

His unaffected piety, his tenderness for and sympathy with all,

seemed always to draw one closer to him, and make one feel that in him one had a real friend."

With this testimony I might well close this notice of our departed friend; but, if it be not an anti-climax, as a layman writing for laymen, I should like to add that to my mind the distinguishing features of Dr. Power's character were his cheerful contentedness, his transparent honesty and unassuming simplicity, his liberality in thought and deed, his entire unselfishness. Blameless in every relation, happy in his home, enthusiastic in his favourite pursuit,—his peaceful and unadventurous life has reached its end. All who knew him will remember Dr. Power with affectionate regret. As an entomologist, it will be long before we see his like.

J. W. DUNNING.

VARIETY OF *EUCOSMIA UNDULATA*.



VARIETY OF *EUCOSMIA UNDULATA*.*

I BEG to enclose a coloured sketch of a well-marked variety of *Eucosmia undulata*, which emerged in my breeding-cage at the end of last month. It will be seen that the undulating lines, which in the type are quite distinct, are in this specimen merged into one another, so as to form two black bands,—one basal and one median. On the hind wings the transverse lines are extremely indistinct, and indeed scarcely to be made out at all. The only distinct remaining feature of the ordinary type is the zigzag white subterminal line. The specimen is a male. One other male emerged a couple of days before this one, but was of the ordinary type, though rather dark and very distinctly marked.

G. E. CRALLAN.

Cambridgeshire Asylum, Fulbourn, near Cambridge,
June 16, 1886.

[The woodcut given above is drawn by Mr. H. Knight from Dr. Crallan's sketch.—ED.]

LOCALITIES FOR BEGINNERS.

BY JOHN T. CARRINGTON, F.L.S.

No. IX.—WESTERHAM.

THE utility of the former articles of this series having been demonstrated by thanks received from both beginners and older entomologists, I am induced to add to their number.* Being requested some time since to take charge of one of the summer field excursions of the South London Entomological and Natural History Society, I selected Westerham, which was duly visited by some two dozen or more members on the 17th of July last. These for the most part visited the locality for the first time, and several expressed a desire that I should write something on the locality, so that others might benefit by knowing so fine a collecting-ground; hence the following description of Westerham.

Westerham is in Kent, some seven miles west from Sevenoaks, on a branch line of railway from Dunton Green Junction, of the South Eastern Railway, and is about twenty-five miles from Charing Cross, whence there are frequent trains, the last returning from Westerham at 9.40 p.m. The geological formation of the district is very varied, as, in consequence, is also the flora. To the north of the village there is chalk for miles running east and west; whilst southwards is part of the long range of hills covered with heather, bilberry, Scotch fir, with large sections of woodland containing the usual masses of oak, beech, birch, &c.

On arrival at the railway station we pass up to the village, bearing to the left where the road divides past the stable entrance to the 'George and Dragon' hotel, at which house every accommodation for refreshment and lodgings may be obtained. There is also a second hotel, the 'King's Arms.' The village is of some size, and doubtless lodgings may be obtained in private houses when preferred.

To work the chalk districts, return past the station and follow the road for about a mile, when a large chalk-pit will be reached; on either side of this are pieces of rough collecting-ground, such

* For former articles in this series, see vol. xii., p. 162, Wanstead Flats; vol. xii., p. 188, Riddlesdown; vol. xii., p. 209, Darenth; vol. xii., p. 233, Loughton; vol. xii., p. 259, Wickham; vol. xiii., p. 74, Sevenoaks; vol. xiii., p. 121, Pinner; vol. xiii., p. 169, Wicken; also, though not numbered, vol. xvii., p. 145, Rannoch.

as is most frequented by the chalk-hill loving species. A little distance to the left are some trees, but this woodland I have never tried, though from a distance it looks worth a trial.

From the 'George and Dragon,' if we cross the main village street, we shall, by bearing to the left, find a passage between the houses. This leads us down to a little bridge over a very small stream, which is the River Darenth; crossing this and the meadow we enter the park, and follow the path in front of us up the hill. Here it is worth while looking back, for we get a good view of the village and the distant hills to the northward, one of the higher points to the right being Knockholt beeches, well known as a landmark, but a sadly disappointing place to visit. Continuing our path, and bearing to the left, we come to a high-road leading from Westerham to Crockham Hill; we follow this for a few yards southwards, when we come upon some common-land, and see, again to our left, a schoolhouse. Here begins our collecting, about ten minutes' walk from the village. All to the left of the road is open and free to collectors.

Without specifying any long list of names of insects to be taken on this part of the district, I may mention that heath (*Erica*) and ling (*Calluna*) constitute the chief undergrowth, with bracken in patches, though very many other low plants occur. Among the trees and shrubs, Scotch fir and juniper are most common, with sallow and many others studded about in suitable places. Behind the schoolhouse will be found some old sand-pits, which should be a fine hunting-place for Hymenoptera, &c.

To continue our walk we will pass close to the west of the school, and on the same side of the allotment gardens, which are bounded by a hedge of very mixed growth and well worth beating. A little way along, the gardens are divided by a path through them; this we follow, taking the path along the east side of the gardens to the end where it meets a cartway across the heath. On the sloping bank, as we leave the thicker scrub, I have taken several good species, such as *Nemoria viridata*, one or two of the Knot-horns, viz., *Phycis fusca* (*carbonariella*), *P. ornatella*, *Pempelia palumbella*, &c., with lots of other Lepidoptera worth taking.

On arriving at the cartway, we notice on the other side quantities of juniper, which is worth working for the special things affecting it. As, however, my special object is to point out the bearings of the ground for future collecting, we will

continue to the left or eastwards up the cartway and over the brow of the hill, until we come to a cottage surrounded by a high hedge. Here we find the boundary hedge of the common, with a gate leading into a field much overgrown with heath, ling, wild thyme, and many other favourite food-plants for various orders of insects. This is a very likely patch of ground, much sheltered by tall hedges of beech and oak. Here we may pause a little, and beat over this growth with certainty of getting something worth boxing. Following the cartway by the west side of the hedge, we now work south-westward until we come to a lane to the left. This lane has a wood to the right hand, and a very fine old beech hedge on the left. We shall find beating or mothing well repay us in this old lane. In the oak wood on the right are some fine patches of foxglove and other plants in the clearings. Here were found, by the visitors on the 17th July, plenty of larvæ of *Eupithecia pulchellata* and other things. We will follow the lane down to the end of the wood, when we come to a gate at the right, over which may be obtained a very fine view of the open country lying between us and the South Downs which loom up in the distance. To our left we see Tunbridge Wells, and over to the right, some eight or ten miles away, is East Grinstead, with Tilgate Forest beyond to the westward.

We now return up the lane back to the common, for this has been a slight digression from our walk. Before us are several paths leading in various directions from this point, so we take the second to the left. This will take us quickly down a rather steep hill into the main road, which we left by the schoolhouse. Where this path joins the road are one or two cottages, and we must now decide whether to extend our walk southwards or to make our way back to Westerham through the woods.

If we take the southern road we shall find it very well worth exploring towards Crockham Hill. Here are old fir-woods, with plenty of heather, &c., and some interesting scenery. This will add very considerably to our walk, and is perhaps better taken on a day of its own. We will therefore turn northwards up the road as though returning to Westerham. On our left is a very large wood of mixed trees; this is the Tower Wood, so called from a ruin about its centre, said to be of a hunting-lodge or

resting-place much used by Henry VIII. We enter the wood by a gate on the left hand as we approach the top of the hill. Passing along the ride we come to a cross ride, and turning down this to the left find the Tower ruin. Passing this we now enter quite a different character of wood, where fine old beeches form a cool canopy of shade in the heat of a summer's day. Through these is the sward of the park, studded with groups of well-grown old trees, most suitable for pupa-digging. To get to these we must cross the ditch-like stream at the bottom of the valley, which stream is the source of the River Darent. As, however, we have explored enough for one ramble, we follow the path on the right bank of the stream, and through the wood down to the mill, passing which we take the lane up to the village, which is quite close, and so up to our head-quarters the 'George and Dragon.'

It must be remembered that it is necessary to get leave for the Tower Woods, which leave may be obtained by writing to the owner, Colonel Warde, Squerryes Court, Westerham, for a ticket for the day. This he most kindly gives, as a rule; but as there is so much other ground equally good, over which we may collect without troubling the colonel, it is by no means necessary to write for this leave on every visit to Westerham.

Another very interesting walk in the neighbourhood is by taking our way westward down the village street from the 'George and Dragon.' We continue until we pass a long pond on our left hand, when a road leaves the high-road to the left and goes between some iron fencing. This passes the entrance to Squerryes Court, which may be seen among the trees to the left. After passing the grounds we come to a farm-house, also on the left, and opposite this is a lane leading to some hop-kilns. Just before reaching these is a path to the left over a couple of fields, leading into a wood beyond. This wood is part of Westerham Chart, and a very good collecting-ground; bilberry is here in great profusion. By taking our way sharp to the left on entering the wood we come to the long ride, a fine avenue of fir trees, which would make an excellent sugaring-walk of nearly a mile in length. This avenue starts from a gate which leads into a hop-garden nearly opposite the farm mentioned, and ends at the top of the hill, overlooking the valley at a point a couple of miles west of where we passed the foxgloves in our last walk.

If on entering the wood we follow the path westward, we come to the high-road again, and, bearing to the left hand, we shall find some nice collecting-ground, with very mixed undergrowth, shrubs, and trees; birch being in plenty. I have seen this place and all the Chart south of this road, east of the mill on the top, well alive with insects in early spring, *Brephos* especially abounding. In continuing our walk we may either take the road to the east of the mill on the top of the Chart and so back to Westerham, or, if London bound, across Lingfield Common to Oxted station, and so home.

The Westerham district is good at any period of the year, when collecting is to be done, from sallows in the spring to heather bloom in the autumn. The flora and foliage are so varied that nothing will repay at any time during the season; while many moths should be taken at sugar, both in species and specimens. Much of the ground is open to the public, and the locality is by no means over-run by excursionists.

I have given but a very slight sketch of some of the many walks to be taken in the neighbourhood, and only sufficient is intended to induce naturalists to take an interest in the locality. I leave to the explorers the pleasure of finding out for themselves what occurs in the district, and the sudden surprises in store for them will, I am sure, make many an entomologist rejoice that he has visited Westerham.

Savage Club, Savoy, London, W.C., July 24, 1886.

DEIOPEIA PULCHELLA.

By W. F. DE V. KANE, M.A., M.R.I.A., F.E.S.

MR. SALWEY'S paper (Entom. 170), discussing the claim of *Deiopeia pulchella* to be considered a permanent British species or merely an occasional visitor, touches upon a subject which is gradually attracting increased attention. The migrant habits of many of our Heterocera and some of our Rhopalocera are becoming more widely noted, although the causes are still somewhat obscure. The increased abundance of many of the Sphingidæ in Britain, during summers of abnormal heat, appears not due solely to the suitability of such seasons for the reproduction and multiplication of such of them as require a greater warmth during some stage

of their life-history than is afforded by the normal climate of Britain at that period of their existence, but seems also largely consequent on a corresponding increase of temperature on the Continent at the period of the flight of the imago; for it is undoubtedly the fact that the activity of the perfect insect is largely influenced by this condition, and the great distances which many of the large hawk-moths are capable of traversing have been attested by records of the capture of various species on board ships in mid-ocean [see Entom. 147.—Ed.]. Also among some species of Lepidoptera excessive multiplication, owing to local causes, has been observed to induce a migration of the imagines, probably in search of a less depastured district.

The records of Irish Entomology, so far as they are available, seem to bear out the above opinion; for the sudden appearance of *Colias edusa* and *Sphinx convolvuli*, &c., in England, in such summers as that of 1885, is generally paralleled in Ireland by a corresponding phenomenon, but in a lesser numerical degree; but if a second hot season succeeds, very usually the first year's migrants are found to reproduce themselves in such numbers that our fields and gardens are replenished to perhaps an equal degree with those of the more favourably situated island.

These remarks, however, may seem to bear but little on the beautiful insect whose parochial settlement Mr. Salwey discusses. But, although it is very hard to believe, there seems good reason for maintaining that *Deiopeia pulchella* is an erratic species, and has some habit of migration which is very hard to account for in a lepidopteron of apparently such weak powers of flight. Possibly it has some power of sustaining a lengthened flight when carried upon a strong wind; for it has been taken, on one occasion at least, lately, far away in the Atlantic; and whether it flew the whole distance or was carried on the rigging of a ship, the fact remains that the imago has some habit which conduces to a wide distribution, whether by ship or railway train. In Central Europe its occurrence is, I believe, usually looked upon as sporadic; but in the southern countries, chiefly those on the Mediterranean coasts, or in islands such as Corsica, it breeds abundantly and constantly. This is also the case along the North coast of Africa and Sierra Leone; and it appears to have spread over a wide portion of the earth's surface, chiefly such regions as enjoy a subtropical climate.

While, therefore, it seems probable that specimens from time to time find their way to Britain, as well as to some countries on the Continent, which are ill-adapted for its permanent establishment, yet there seems good reason to think that the annually recurring notices of its capture in the southern counties of England, as cited by Mr. Salwey, point to its permanent establishment there, although the delicacy of its constitution prevents its reproduction in any considerable numbers, except where more genial climatic conditions exist.

A careful investigation of its life-history, combined with a comparison between the climates of Algiers, Corsica, or the southern portion of Provence and that of Britain, would probably throw much light upon this obscure question; and it may be allowable to suggest that while the summer of the South of England seems warm enough for the requirements of many exotic insects, both our spring and autumn are widely dissimilar from those of countries which border the Mediterranean; and this may afford the explanation desired.

Mr. Harcourt Bath notices (Entom. 174) the profusion in which *Pieris brassicae* has occurred in England during the past two seasons. Here, in Ireland, I observed it to be somewhat more numerous than usual, and this summer this is much more the case. The cause, perhaps, is the same as that I have indicated in the above remarks; and, as usual, we seem to lag behind England in good fortune.

Sloperton Lodge, Kingstown, Co. Dublin, July, 1886.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

CÆNONYMPHA TYPHON NEAR BARMOUTH.—During the past week we have taken *C. typhon* (*davus*) in some abundance on a piece of peat moss a few miles from here, and as this insect is usually found at rather high elevations, it may be interesting to note its occurrence at this station, which is considerably less than 50 feet above sea-level. All the specimens taken have the grey and shaggy appearance of the hind wings described by Newman as characteristic of the typical *C. typhon*, as distinguished from the var. *rothliebi*. The latter we have not noticed here.—E. H. GREERLY; Barmouth, July 3, 1886. [This communication answers Mr. W. T. Kerr's enquiry, Entom. 124.—Ed.]

RESTING HABIT OF *LYCÆNA MINIMA*.—On the 19th of June, at Horsley, Surrey, I found numbers of *Lycæna minima* (*alsus*) asleep on the undersides of the leaves of the small shrubs on the sheep leas. Fifty or more on one little tree about three feet high (a seedling beech). The afternoon was dull and lowering, and nothing on the wing. A note on this habit of *L. minima* may be interesting, and perhaps useful, to some of your readers. —JOHN A. HELPS; Newstead Lodge, Westhall Road, Forest Hill, S.E., June 28, 1886.

DEIOPEIA PULCHELLA IN SOUTH DEVON.—I am able to give one more instance of the capture of *Deiopeia pulchella* which has not been previously recorded. I have in my possession a fine full-coloured specimen captured by a relative, an old entomologist, in the month of October, 1876, on the coast of South Devon. Two specimens started out from a bush at the same time, but one succeeded in making its escape.—T. B. JEFFERYS; Clevedon.

DEIOPEIA PULCHELLA.—With regard to Mr. R. E. Salwey's theory (Entom. 170), that *D. pulchella* is established and breeds in England, I think the fact that specimens have been taken in Herefordshire does away with the blow-over theory, at least as far as the western portion of the kingdom is concerned. I have seen two specimens which were captured within three miles of this city, one at rest, the other picked up, and caught with a hat without difficulty; the account I received was that the flight was very sluggish. Probably other captures have occurred. Unfortunately entomologists in this county are very few in number, so that rarities have very little chance of being recorded. —J. B. PILLY; 2, High Town, Hereford, July 22, 1886.

HADENA RECTILINEA.—In reply to Mr. A. E. Hall's enquiry about this insect (Entom. p. 181), my experience is somewhat similar to that of the collector he mentions. I first made the acquaintance of this species in 1881, when it was the most common insect at sugar in a fir-wood near Aberdeen; but in the three following seasons it almost entirely disappeared, only appearing singly. I was from home last year and this during the time of its appearance, therefore cannot say in what numbers it turned up then, but I have not heard of any being taken at all. I shall be in the locality in a week, or thereby, and if the season is as late in Aberdeenshire as here in Orkney, I shall not be too late

in sugaring for it then.—ARTHUR HORNE; Pierowall, Westray, Orkney, July, 1886.

PLUSIA FESTUCE. — Perhaps some of the contributors to the 'Entomologist' would kindly inform me if *P. festucæ* is double-brooded. I have been told it is, but as far as my experience goes, I have never found it to be the case. I have taken it every season more or less for about a dozen years, and only in one locality. It formerly occurred in a few places about here, but it is now confined to one locality, which is well adapted for it, being in an enclosed valley containing plenty of its food plants. It feeds on rank grass and yellow flag. I fear it is rather too much searched after every season to continue much longer with us. I, for one, would like to give it one year's rest, in order that it may gain strength in population. I only took three larvæ this season. I neglected to look at them until the middle of July, when I found two imagines were dead and one alive, but they have deposited about one hundred ova. Newman says they fly in August, but I have never seen them. Can any one inform me if the eggs are hatched in the same year, and if the larva hibernates? I have put my ova in a cool cellar, hoping to keep them from hatching until next spring. Will someone be kind enough to give me the information required?—JAMES GRIME; 214, Halliwell Road, Bolton, Lancashire, July, 1886.

ERASTRIA VENUSTULA.—I have great pleasure in recording the successful rearing from ova of the above-named species. — H. JOBSON; 3, Clarendon Road, Walthamstow, July 21, 1886.

RAPID HATCHING OF LEPIDOPTEROUS OVA.—On Friday, the 2nd of July, at about 7 p.m., I beat out of a hedge a female specimen of *Anticlea rubidata*. On reaching home I confined it on *Galium aparine*, and on the following afternoon it died, after laying some thirty eggs. These produced young larvæ about noon on Thursday, the 8th of July. The weather, as most of your readers will, no doubt, remember, was abnormally hot during the above-mentioned period, but for the ova of Lepidoptera to hatch on the sixth day after they were deposited is to me quite unparalleled.—GILBERT H. RAYNOR; Shenfield, Brentwood, July 10, 1886.

THE TEPHROSIA DISCUSSION.—I am much interested in the *Tephrosia* discussion; and a year or two ago was thinking of

raising the question myself in the 'Entomologist.' Here, in Ireland (Killarney), I have never taken the insect earlier than mid-April; and a fortnight later in Cavan, Tyrone, and Sligo, where in normal seasons *crepuscularia* is abundant about mid-May. Single stray specimens I have seen as late as June 10th; and at the same time a few also of *Tephrosia consonaria* and *Boarmia cinctaria*, insects which began to appear the same season during the second week of April. All these specimens I therefore looked upon as cases of retarded emergence. The type of the insect thus taken at the end of April at Killarney, and mid-May in the North of Ireland, has the ground colour yellowish, with the second line duplicated by a ferruginous band, and the wings flecked with yellowish patches. A few specimens also occur at the same time and place, with an almost white ground colour, and the second line dark brown, sharply etched in, and less interruptedly than in the yellower form. This whitish insect, as far as appearance goes, should be *biundularia*; and I have accordingly, in the docile spirit of an enquirer, labelled it so in my cabinet; but I am, up to the present, sceptical. Even if our climate permitted this insect to emerge earlier and produce a second brood in the same season, which, like the summer form of *Selenia lunaria* var. *delunaria*, is smaller and of peculiar coloration, the habit would not be phenomenal. I have never had the opportunity of ascertaining whether at Killarney a July emergence takes place. I notice that in Birchall's list, *T. biundularia* is said to abound in many localities in Ireland, but *T. crepuscularia* is absent from the list. Perhaps the nomenclature at the date of Birchall's catalogue was different, and the synonymy not established. The whole problem, as stated by your correspondents, is a most complex one, namely, that a pale insect emerging in March and April in the South of England has a summer form of a warmer tone, while in the same locality a very similar insect emerging in May to June assumes the livery of the summer form of the other species, but also has occasional specimens of the pale form. Both species also appear to have melanic varieties of various shades of smoke-colour (which, however, I have never seen in Ireland). It is very satisfactory that the theories held by various competent entomologists on the subject have been so fully set forth in your columns; but it is not likely that the matter can be finally

decided till some naturalist, residing near a locality where both reputed species exist, investigates their life-history exhaustively.—W. F. DE V. KANE; Sloperton Lodge, Kingstown, Co. Dublin, July, 1886.

THE TEPHROSIA DISCUSSION.—With reference to the *Tephrosia* controversy, on April 12th of this season a brother entomologist, whilst with me, captured a small example, the ground colour being white, and the transverse lines dark and very distinct. The only difference that can be seen here between the early forms and the late ones of May and June is in the ground colour; the late examples being uniformly white, and not different shades of colour; the transverse lines, however, are exactly the same both in number and form. This season some of the early examples had not ceased to exist before the later ones put in an appearance.—T. B. JEFFERYS; Clevedon, July 7, 1886.

LOBOPHORA VIRETATA.—I should like to add my testimony to that of Mr. Thornewill as to this pretty Geometer occurring in localities where no privet or sycamore is found (Entom. 174). In natural forest land, with holly and hazel underwood, I have taken it, namely, at Tore Mountain, Killarney, at a wood belonging to Colonel Cooper, of Markree Castle, Co. Sligo, and at one in Tyrone. My experience has been, however, that it settles chiefly on the stems of Scotch fir, when they exist in the locality.—W. F. DE V. KANE; Kingstown, Co. Dublin, July, 1886.

PHORODESMA SMARAGDARIA IN ESSEX. — I have succeeded in bringing through a splendid series of *P. smaragdaria*, the larva of which I found on the Essex coast last autumn. — H. JOBSON; 3, Clarendon Road, Walthamstow, July 21, 1886.

PHORODESMA SMARAGDARIA IN ESSEX.—From larvæ I collected on the Essex salt-marshes last autumn, I am now breeding a fine series of *P. smaragdaria*. The species appears to be well distributed along the Essex side of the mouth of the Thames.—J. A. COOPER; 1, Sussex Villas, Harrow Road, Leytonstone, Essex.

DESCRIPTION OF THE LARVA OF HOMÆOSOMA SENECTIONIS.—On the 29th of August last I received a supply of larvæ of *Homæosoma senecionis* from Mr. F. D. Wheeler, of Norwich, who had found the species freely two days previously at Cromer. Length about three-eighths of an inch, and obese in proportion. Head

small, and narrower than the second segment, both it and the frontal plate highly polished. When the larva is crawling the body appears to be cylindrical and fairly uniform in width, tapering only slightly at the extremities, but when at rest it seems to taper much more abruptly from the 11th segment forward to the head. Skin smooth, but each segment having four depressions, two transverse in the centre, and one on each side, together with the clearly defined segmental divisions, give it a somewhat puckered appearance. Ground colour dark olive-green, with faint purple tinge on the dorsal area; head, frontal and oval plates black—in some specimens dark sienna-brown; the alimentary canal, of a darker shade than the ground colour, shows through as the dorsal line; but there are no perceptible sub-dorsal or spiracular lines; spiracles black. Ventral surface uniformly olive-green, some specimens showing a more decidedly green tinge than others. Anterior legs of the same colour as the head, but very indistinctly ringed with white. Feeds in the flower-heads of ragwort, drawing together the clusters of flowers with silken webs; and when full-fed forms a toughish silken cocoon.—GEO. T. PORRITT; Huddersfield, July 6, 1886.

NOTES FROM CHRISTCHURCH AND THE NEW FOREST, &c.—I arrived down here to begin my midsummer collecting about the middle of June this year. Sugaring regularly up to the end of the month proved tolerably successful, having turned up at least forty species of Noctuæ. Among the most important are:—*Neuria reticulata* (*sapponariæ*), *Dipterygia scabriuscula* (*pinastri*), *Rusina tenebrosa* (common), *Leucania conigera*, *L. lithargyria*, *L. comma*, *Mamestra sordida* (*anceps*), *Miana arcuosa*, *Grammesia trigrammica* (*trilinea*), *Cucullia umbratica*, *Noctua triangulum*, *Dianthæcia capsicola*, *Hecatera serena*, *Agrotis porphyrea*, and *Phytometra viridaria* (*ænea*), at Bournemouth. Geometræ:—*Phibalapteryx vittata* (*lignata*), *Eupithecia rectangulata* (at light), *Larentia decolorata* (at dusk), *Metrocampa margaritaria* (common). Bombyces:—*Arctia villica* (several found at rest), *Spilosoma mendica* (one at rest), *Nemeophila russula* (at Bournemouth and Brokenhurst). Sphinges:—*Charocampa porcellus* (one at rest), *Smerinthus populi* (at rest), *S. ocellatus* (bred), *Sphinx ligustri* (several bred). On July 1st I went to the New Forest (Brokenhurst), remaining there till the 8th. The first two days I did not see or take very much; but on the following three or four days I

visited Rhamnor enclosure, accompanied by Mr. Ernest Joy, when we captured between us over fifty *Limenitis sibylla* in fine condition, and a similar amount of *Argynnis paphia* of unusually large size. At sugar, in New Park enclosure, we took *Thyatira batis* and *T. derasa*, *Cymatophora duplaris*, *Aplecta prasina* (*herbida*), *Leucania turca*, *Noctua brunnea*, and others; the last in great numbers. One night I took a very fine *Cossus ligniperda* flying round the trunk of an oak; it was first discovered by the aid of my lantern. At dusk we took in one evening in a small spot two dozen *Calligenia miniata*; we also met with *Phorodesma pustulata* (*bajularia*), *Melanthia albicillata*, *Timandra amataria*, and *Pericallia syringaria* at light. *Boarmia repandata* was very common, and generally at sugar soon after sunset; we managed to obtain some good varieties, including the banded *conversaria*, and a black variety besides. Immediately after my return from Brokenhurst, I was not satisfied without spending a couple of day's work at Holmsley. The first day was on July 13th, when I met Mr. McRae, who took a large number of *L. sibylla*, amongst others. A magnificent *Argynnis paphia* var. *valesina* fell to each; both specimens evidently had only just emerged from pupa that day. *A. adippe* and *A. aglaia* we took freely. On the 16th I met Mr. Pearce, and went again to Holmsley, and found *L. sibylla* still in good condition, though we let several go; but not being a suitable day we soon got tired of butterflies, and took to beating, which ended in our obtaining *Aventia flexula*, *Bupalus piniaria* (female), *Eucosmia undulata*, *Lomaspilis marginata*, *Hypsipetes sordidata* (*clutata*), and *Melanthia albicillata*.—J. M. ADYE; Somerford Grange, Christchurch, July, 1886.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. — *July 7th*, 1886. J. Jenner Weir, F.L.S., Vice-President, in the chair. Mr. S. H. Scudder, of Cambridge, Mass., United States, was elected a foreign member of the Society. The Rev. H. S. Gorham exhibited specimens of *Eucnemis capucina* (Ahr.), a species new to Britain, discovered in June last in an old beech tree in the New Forest. He also exhibited specimens of *Cassida chloris*.

Dr. Sharp exhibited larvæ of *Meloë*, and read notes on their habits; and Mr. Saunders exhibited a specimen of *Halictus* infested with about thirty *Meloë* larvæ. Mr. Billups remarked that he had recently found forty-seven larvæ of *Meloë* on the body of a specimen of *Eucera longicornis*. Dr. Sharp said that he was of opinion that the operations of these larvæ were not the result of instinct, but were more like reflex actions; the instant the larvæ touched a suitable surface they clung to it. The discussion was continued by Prof. Riley, who disagreed with Dr. Sharp, and believed these larvæ were guided by instinct, as they showed a decided preference for particular hosts. Mr. Jenner Weir exhibited a male of *Lycæna bellargus* and a female of *L. icarus*, which had been captured *in copulâ* by Mr. Hillman, and shown to the exhibitor at the time of capture. Mr. Weir also exhibited some specimens of *Lycæna* which he believed to be hybrids between *Lycæna bellargus* and *L. icarus*; and he further exhibited, on behalf of Mr. Jenner, four specimens of *Phosphænus hemipterus*, taken at Lewes. The Rev. W. W. Fowler exhibited two specimens of *Chrysomela cerealis*, lately taken by Dr. Ellis on Snowdon; and also two specimens of *Actocharis Readingii*, found at Falmouth by Mr. J. J. Walker. Mr. E. B. Poulton called attention to the fact that the larvæ of some Lepidoptera, if fed in captivity on an unusual food-plant, subsequently refused to eat their ordinary food-plant. He stated that he had observed this with the larvæ of *Pygæra bucephala* and *Smerinthus ocellatus*. Mr. Stainton, Mr. Fowler, and others made some remarks on the subject. Mr. Elisha exhibited a series of bred specimens of *Geometra smaragdaria*, together with the cocoons, containing the empty pupa-cases, attached to the stems of the food-plant. Mons. Alfred Wailly, who was present as a visitor, exhibited a long series of silk-producing moths, including some remarkable hybrids between *P. cecropia* and *P. ceanothi*; and Prof. Riley and Mr. Weir made some observations on these hybrids. Dr. Sharp read a paper on "*Eucnemis capucina* (Ahr.) and its larva." Mr. Dunning read a report on the subject of the importation of humble-bees into New Zealand, from which it appeared that the efforts of Mr. Nottidge, of Ashford, and the Canterbury (N. Z.) Acclimatisation Society, had been successful, and that the long-wanted clover-fertiliser had at length been established in New Zealand. Mons. Peringuey communicated "Notes on some

Coleopterous Insects of the family *Paussidæ*." Mr. J. B. Bridgman communicated "Additions to the Rev. T. A. Marshall's Catalogue of British Ichneumonidæ." Prof. Riley read "Notes on the phytophagic habit, and on alternation of generation, in the genus *Isosoma*." In this paper Prof. Riley described, from direct observation, the phytophagic habit in two species of the genus.—H. Goss, *Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*July 1st, 1886.* R. Adkin, Esq., F.E.S., President, in the chair. Dr. C. Mordaunt Matthew and Messrs. Pawsey and Salwey were elected members. Mr. T. W. Hall exhibited a varied series of *Lycæna icarus*, Rott. Mr. W. West, some interesting forms of *Acronycta megacephala*, Fb. Mr. E. Joy, *Anesychia decemguttella*, Hb., bred from larvæ beaten near Wicken Fen. Mr. South, *Eupithecia togata*, Hb., bred from Perthshire pupæ; and a fine variety of *Melanippe fluctuata*, L., taken on a fence in the neighbourhood of St. John's Wood. Mr. Wellman, *Thecla rubi*, L., in one specimen the white spots on the under side being absent; a variety of *Lycæna icarus*, Rott.; a long series of *Eupithecia rectangulata*, L., var. *nigro-sericeata*, Haw., and a light grey variety of the same species; also a series of *Aciptilia galactodactyla*, Hb., bred from larvæ taken during the Society's excursion to Horsley on the 29th May last. Mr. Sheldon, *Angerona prunaria*, L., *Dianthæcia nana (conspersa)*, Esp., bred from Deal larvæ; *Asthena luteata*, Schiff., and *Phoxopteryx derasana*, Hb., from Riddlesdown. Mr. Billups exhibited two living larvæ of *Boarmia repandata*, L., received by him from Mr. South, and which showed a curious arrangement of the cocoons of a species of *Panteles*; the larvæ spun a little pad of silk, then bent themselves into a bow on the twig, and the parasites began to creep out of the host, and formed their cocoons, to which the larvæ seemed to be affixed. [This curious habit was figured in the 'Entomologist,' xiii. 244.—ED.]

July 15th, 1886. The President in the chair. Mr. Wellman exhibited *Eugonia autumnaria*, Wernb., bred from ova received from Folkestone. Mr. Jager, *Dianthæcia nana (conspersa)*, Rott., bred from larvæ obtained at Caterham, Surrey, and Teignmouth, Devon; those from the first-named locality feeding on *Silene inflata*, and those from Teignmouth on *Silene maritima*; also

Dianthæcia capsincola, Fues., *Eupithecia linariata*, Fb., *E. virgaureata*, Dbl., *E. pumilata*, Hb., *E. rectangulata*, L., and *Botys terrealis*, Fr., all bred by following the instructions given by Mr. Carrington for collecting the larvæ (Entom. xviii. 148). Mr. Gaskell, a variety of *Ematurga atomaria*, L., taken at West Wickham. Mr. J. T. Williams, a striking variety of *Abraxas grossulariata*, L.; a specimen of *Cabera pusaria*, L., irradiated with black; a pretty form of *C. exanthemata*, Scop.; a bred series of *Acidalia strigularia*, Hb., from Folkestone; and *Dasycera olivierella*, Fb., from Foots Cray. Mr. T. Gibb, jun., *Asthena blomeri*, Curt., *Hepialus velleda*, Hb., var. *carnus*, St.; and a fine variety of *Melanippe montanata*, Bork., all taken by himself. Mr. Adkin, living larvæ of *Notodonta trepida*, Esp. Mr. South, varieties of *Boarmia repandata*, L., and a long series of *Aphomia sociella*, L., some having been bred from the cocoons found by Mr. Williams, and which were exhibited at a meeting of the Society (Entom. xix. 191), and the remainder from larvæ which had pupated amongst a bundle of sticks. Mr. South communicated some interesting notes on this species, and remarked that he imagined the group of cocoons found by Mr. Williams was the natural mode of pupation of the species, and those in the sticks being the method adopted in confinement. Mr. Billups exhibited specimens of *Cleptes nitidula*, Latr., taken at Benfleet in Essex, July 5, 1886, on the umbelliferous bloom of the common cow-parsnip (*Heracleum sphondylium*), and stated this was a very local species, and was probably the rarest of the twenty-two species comprising the family Chrysididæ; also larvæ of *Geometra papilionaria*, L., and its parasite *Apanteles rubripes*, Hal.; the larva was still living, although the parasites, to the number of nineteen, had emerged more than a fortnight before; neither had it eaten any food since then. The Secretary read a letter from Mr. Perkins, a former President of the Society, as to the capture by his nephew of a probable *Sesia andreniformis*, Lasp.; and Mr. J. T. Carrington made a communication as to the mode of working for this insect at privet-blossom.—H. W. BARKER, W. A. PEARCE, Hon. Secs.

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IN SEARCH OF *ZYGÆNA EXULANS*.

By W. H. TUGWELL.

ON July 7th of this year Mr. Lachlan Gibb and I started by London and North-Western route for Braemar, our principal object being to try and get *Zygæna exulans*, an insect which is extremely difficult to obtain, owing to its only habitat in the United Kingdom being situated in the midst of one of the most extensive and carefully preserved deer-forests of Scotland. Fortunately Mr. Gibb had been enabled to obtain the great favour of a pass for himself and friend into this forest; so that we started under most favourable auspices, as this vast and lovely domain is reserved for the wild red-deer alone, and the foot of a tourist or net of an entomologist rarely disturbs this mountain home of "the monarch of the glen."

My first experience of Scotch collecting commenced at Inverurie, twenty miles north of Aberdeen, where I went to spend one day with Mr. Tait, who had collected some very rare Lepidoptera in that district. After dinner we started off on an exploration of his hunting grounds, but unfortunately the day had grown wet, with strong wind, so that we had little chance of doing much amongst the Lepidoptera. All the ditches were full of the bright yellow flowers of *Mimulus luteus*, evidently thoroughly established there; and in a field hard by the pretty *Galeopsis versicolor* was not uncommon. Near the roadside the graceful *Alchemilla vulgaris* grew in some quantity.

I noticed the common harebell was much more robust, and had larger and more numerous flowers than with us in England. On skirting a boggy heath my friend pointed out the graceful *Parnassia palustris*, which grew in plenty there, although hardly in flower. Whilst going over a patch of rushes we found a few *Lycæna astrarche*, var. *artaxerxes*, at rest; also the typical *astrarche* (*agestis*), very large and finely coloured. A stone fence produced one female *Acronycta euphorbiæ* (*myricæ*). The rain coming on more heavily we went to a fir wood, where *Goodyera repens* was fairly common, whilst the delicate little *Trientalis europæa* was in profusion. Only a few generally-distributed moths could be disturbed off the tree boles, so we pushed on some two miles, to see the very local plant, *Linnaea borealis*. We passed some most promising-looking ground; a bog evidently held some young curlew, by the flight and cry of the parent birds. We found our plant in fair quantity, but not in flower, it being apparently a late season. Then on through a large pine wood full of bilberry, capital collecting ground, but the cold wind kept everything close. Thus ended my first day in Scotland, as the round of sugar at night was a blank, only a solitary *Agrotis exclamations* gracing our feast.

July 9th.—I retraced my steps to Aberdeen this day, and thence by rail to Ballater, and by coach on to Braemar. The day was fairly fine, but strong wind. During the lovely ride we had kept a sharp look-out for Lepidoptera, but evidently they were not numerous. We obtained suitable rooms at Braemar, unpacked and prepared for the morrow.

The morning of Saturday, the 10th, fortunately proved fine, so we were soon up and doing. Before us we had a stiff climb, and as we passed through the belt of fir trees we found Diptera both numerous and troublesome. *Thera variata* and *Bupalus piniaria* were common, but we had no time to devote to such fry, our motto being "*Exulans!*" *Argynnis aglaia* was flying pretty freely, and it and *Lycæna artaxerxes* were secured *en route*, with an occasional *Dasydia obfuscaria*, but the ground was too rough to venture giving chase. *Scopula alpinalis* was occasionally started, as was *Emmelesia minorata* (*cricketata*), whilst *Eubolia plumbaria* was abundant. As we got more up the mountain, on the mosses, we saw a few *Carnonympha typhon*; although fresh, most of them were chipped, doubtless by the strong wind prevailing in this elevated region.

Toiling upwards, quite a lot of interesting plants were obtained: *Polygonum viviparum* and *Pinguicula vulgaris*, with its violet-like bloom; also *Tridentalis europæa*, here much smaller than at Inverurie; whilst the commonest plant of the district was *Alchemilla alpina*. More sparingly we found the striking little *Cornus suecica*, with its black and white flowers: and on the burn-sides, *Thalictrum alpinum*, with its fern-like leaves, and *Epilobium alpinum* were in turn gathered for herbaria; then *Rubus chamaemorus* began to show itself in the cloud region, and *Toxifieldia palustris* occurred sparingly on damp places. Now, as we were 2000 feet up, we began anxiously to look out for our *Zygæna*. The crowberry (*Empetrum nigrum*), *Arctostaphylos uva-ursi*, and the pretty little shrub, *Azalea procumbens*, were all common. At last, at about 2500 feet, I netted my first *exulans*, booming along in the sunshine; it was in perfect condition, and a fine example of the form *subochracea*. This put life into our working, and we scoured the hillside up and down with only very moderate success; an hour's hard work resulted in five to me and four to Mr. Gibb; but as the sky foretold a change, we worked away with a will, and by six o'clock we had each succeeded in getting a fine series. We then returned to our quarters for an eight o'clock dinner, well pleased with our first day's work at Braemar, and far too tired to try night work.

Sunday, a welcome day of rest until tea-time, after which we started off for a walk to "The Linn of Dee," seven miles out. The evening proved fine, and as we returned we saw quite a number of red-deer. Few insects were noted on wing; the only one I inspected proved to be *Larentia cæsiata*, the first I ever saw alive of this common northern species.

Monday, July 12th, opened dull and showery; however, knowing that *Zygæna exulans* was fully out, we decided to devote ten days to this part of our work. So we pushed off up the hill, the seat of our previous Saturday's labours, but found the wind on the mountain-tops extremely cold and strong; consequently, although we worked fully as hard, the result was comparatively very poor. When the too frequent rain-showers were driving over us, we were glad to cover ourselves up with our waterproofs for shelter and warmth. It was surprising to see how soon *Zygæna exulans* utilized every short gleam of sunshine, evidently

being quite alive to the fact that in their elevated home they must waste no time. A few moments after a hard cold rain and they would fly, if only a glint of sun lasted a few moments.

Tuesday, the 13th, was a repetition as to weather and captures.

Wednesday, the 14th, proved so rough and cold that we determined to do a little mountain climbing up to the distant snowfields, so started for Ben Aboard, which is one of the highest of the Grampian range of hills. Our path was a steady rise for some eight or nine miles up a charming glen, with a rapid brawling burn by our side. Several plants were obtained, such as *Saxifraga stellaris*, which looked very pretty by every rill, and *Saxifraga azoides*, more sparingly so. *En route* we saw all the British species of the genus *Vaccinium*, viz., *V. myrtillus*, *V. uliginosum*, *V. vitis-idaea*, and the very delicate little *V. oxycoccus*. A few small plants of the curious *Botrychium lunaria* were noticed, and as we neared the base of Ben Aboard we found the dwarf birch *Betula nana*, fairly common at one spot, whilst by the burn-side *Arabis petraea* grew freely. A few plants of *Gnaphalium supinum* were found, and *G. dioicum* was generally common. We now commenced a very stiff ascent of about another 2000 feet to the top of Ben Aboard: as we neared the snow we saw several ptarmigan (*Lagopus mutus*). These birds breed on this elevated ground in some numbers. Near the summit we saw a brood of the young; the poor old hen went through some most fantastic antics to draw us away from her chicks, which, needless to say, we had no desire to molest. In a sheltered spot we took our first and only *Psodos coracina* (*trepidaria*) which was in a most tattered condition, so we presumed we were too late for this species. Here, *Azalea procumbens* was in full flower; also *Rubus chamaemorus*, both of them being over at lower ranges. We were now close to large and deep fields of snow, the wind bitterly cold, but the ground was covered with patches of the lovely little *Silene acaulis*, quite a gem set in this desolation. Fortunately for our object the air was quite clear, and we had a most extensive and impressive view of miles of this grand Grampian range. Still we were soon glad to seek a lower and warmer region. Passing over a large tract of crisp snow to a little burn, we found *Caltha minor*, creeping and rooting at its joints in the mud; although only a var. of *C.*

palustris, it is very unlike that plant. What surprised me greatly was to come upon quite a bright patch of the common sea-thrift, *Statice armeria*; curiously, this was the only spot I noticed this plant in the district. On our journey back, for a short time, insects began to fly pretty freely, and we netted *Larentia salicata*, *Acidalia fumata*, *Eupithecia nanata*, &c., but rain coming on, we had eight or nine miles to trudge in the wet.

Thursday, 15th.—It poured with rain and blew half a gale, so we had to content ourselves with setting up all our previous captures.

Friday, 16th.—The wind was still so strong and cold that collecting in such a mountainous district was almost impossible, so that we went off on a botanical excursion to the station of one of our prettiest and rarest plants, *Astragalus alpinus*, which grows on a grassy hillside some seven miles out of Braemar. Our path for a mile or so ran by the Dee-side. Here we noticed, flying about, a number of the pretty oyster-catchers. They nest here, as does the curlew; both species evidently had young ones near. The first plant new to us observed was *Pyrola rotundifolia*, not yet in bloom, and *P. secunda* occurred farther up the glen. We found *Astragalus* in splendid condition and in some plenty, but extremely local. *Dryas octopetala* was found, but very little bloom; plenty of plants. *Habenaria viridis* was fairly common in one spot, whilst a few plants of *Saussurea alpina* and *Saxifraga hypnoides*, var. *platypetala*, were collected from some craggy rocks near. One could scarcely believe it was mid-July, as it was so cold our finger-tips fairly ached, and the lobes of my ears were graced with two fine chilblains. A few good Coleoptera were picked up as we retraced our steps; and from the bottoms, on the mosses, we boxed off a few *Cænonympha typhon*, at rest. We felt we had not wasted our day, as we had collected quite a lot of good alpine plants.

Saturday, 17th, proved fine and hot, so we were soon wending our way for *Zygæna exulans*. We worked all day very hard for this local species; very little else was to be obtained on the ground. Mr. Gibb was fortunate enough to net a female *Pachnobia hyperborea* (*alpina*) flying in the afternoon sunshine. We had hoped to have met with *Crambus furcatellus*, but did not; and although we searched very closely, we only found one pupa-case of *Z. exulans*, and that was attached to the underside of a branch of crowberry.

Had it not been for our fine series of the one special insect, our captures would have been poor indeed in the region of Braemar.

Monday, 9th.—Sent off our luggage and setting cases by coach, *viâ* Dunkeld for Blair Athole, we taking a trap as far as Bynoch Lodge, and from that point walked through the wild and romantic Glen Tilt. The weather was fine for touring, not being too hot, with a fresh head-wind blowing. The first five miles, from Bynoch to head of the glen, the road or bridle-path was of the worst possible description, through heather, over loose rolling stones, more like the dried-up bed of a mountain burn than a path, and this made the journey very trying; but when we entered the glen proper, it was a trifle better. The scenery was very striking, but wild and bare-looking; numerous little burns, rushing down the mountain sides, like lines of silver glistening in the sun. *Saxifraga azoides* here grew in great profusion. The pretty blue *Gentiana campestris* was common, and by the Tilt-side we first met with *Oxyria reniformis*.

Insect-life was by no means prolific; only *Scopula alpinalis* and *Emmelesia minorata* were captured: the wind was too strong. As we neared Forest Lodge, about half-way through the glen, Nature began to wear a verdant garb. In place of the bare hill, or only scantily covered with stunted heather, &c., the glen looked beautifully green and fresh. Thousands of long-horned sheep were being collected for shearing, by kilted shepherds, aided by their clever colley dogs, together making a most beautiful picture. In a sheltered nook we found *Emmelesia albulata*, but *passé*. A drink of milk at the Lodge was very acceptable, and Mr. McDonald showed us seven live foxes he had caught. The aroma from them was, to say the least, strong, and the poor caged brutes seemed very unhappy as they slunk about their stable. The road from Forest Lodge to Blair Athole was first-rate, so we trudged along briskly, and reached the hotel after a trying walk of nine hours.

Tuesday, 20th. — Left Blair Athole *viâ* Struan for Kinloch Rannoch, where we found capital quarters at Mrs. McDonald's, Bun Rannoch Arms. As we came along we had a beautiful view of Schiehallion, it being fine and bright; but that was our only glimpse of it, as it changed to cloudy wet weather during our stay, entirely marring our hope of collecting, blowing half a gale most of the time.

We certainly saw the well-known Black Wood, but under the worst possible condition; a few common Lepidoptera were collected from the tree-boles, such as *Larentia cæsiata*, *Thera firmata*, *Ellopiæ prosapiaria* (*fasciaria*), and the local form of *Boarmia repandata*; but the undergrowth was so soaking wet that nothing would rise from it, and we had to content ourselves by imagining what a nice lot of things we should have had, given fine weather. A few interesting plants were collected in Rannoch, viz., *Pyrola minor*, *Carduus heterophyllus*, and *Comarum palustre*; and from the stony banks of the River Tummel, *Thalictrum minus* var. *montanum*, and *Oxyria reniformis*.

Although during our run of seventeen days we had very bad weather for entomological work, still we left Scotland feeling we had spent a holiday that will leave a pleasant memory of our trip to the Grampians for many years to come.

6, Lewisham Road, Greenwich, S.E., August 10, 1886.

DESCRIPTION OF A NEW CECID.

BY PETER INCHBALD, F.L.S., AND R. H. MEADE.

Cecidomyia clausilia, Bouché.

AFTER not a few fruitless attempts, I have succeeded in rearing the Cecid that affects one of our British willows (*Salix alba*), and lives in those little half-moon pads on the margins of its lanceolate leaves, as figured by Bremi, of Zurich, in the 'Transactions of the Swiss Natural History Society,' in 1847. Bremi did not succeed, it appears, in rearing the imago; but he tells us that a single larva tenants each pad, and thus he supplies an important link in its economy. A previous notice of this Cecid was given us by Bouché, of Berlin, in 1834, so that priority of name naturally rests with him. Since 1847, H. Loew, Kaltenbach, and Rudow have given some particulars in relation to the home of the larva. In our own time Bergenstamm (1876) remarks in his 'Synopsis,' in relation to unknown and undescribed imagines:—"These leaf-rollings are the work of a *Phytoptus*, and thus the Cecid-larvæ may be looked upon as inquilines." It may be so, but it is not my experience. I may

add that I have reared it from the pads, in which I find the pupa enclosed in a flossy shroud, in considerable abundance, both males and females, fully fifty having emerged in the first half of August. Each morning, early, I find them in my glass-topped boxes, and have learned to recognise the male by its merry, restless flight. The female is more staid and sober in its life and movements, the oviduct being prominently exerted and coloured, just as Mr. Meade, whose diagnosis is appended, describes it to be. This present Cecid would seem to frequent, perhaps exclusively, the leaves of the white willow (*S. alba*), whereas a cognate species affects the osier willow (*S. viminalis*). This is also figured by Bremi; but in the latter case the margin is continuously rolled in, whereas in the former it is only interruptedly so.

PETER INCHBALD.

Fulwith Grange, Harrogate.

CECIDOMYIA CLAUSILIA, *Bouché*.

Nigra, abdomine rufo-fusco. *Antennæ* 14-articulatæ, mas et fœm., articulis mare petiolatis, fœmina sessilibus. *Thorax* niger, fasciis cinereis. *Scutellum* pallidum. *Oviductus* elongatus, sine lamellis, articulis duobus primis supra nigris, subtus albidis, articuloque terminali flavido. *Pedes* pallide-fusci, albo-pilosi. *Alæ* claræ parce hirtæ venis cubitalibus rectissimis paulo ante apicibus terminatis. *Halteres* nigro-capitati. Long., mas $1\frac{1}{4}$, fœm. $1\frac{1}{2}$ mm.

Head black, with a reddish spot and a small tuft of white hairs on the face. Palpi pale. *Antennæ* brown, about two-thirds of the length of the body in the male, and about one-third in the female; 14-jointed in both sexes; joints petiolated, and verticillated with white hairs in the male, sessile in the female. Thorax black, striped and shaded with grey; sides behind the bases of the wings, as well as the roots of the wings themselves, red. Scutellum whitish yellow. Abdomen reddish brown, covered with dark scales arranged in irregular transverse lines; body of male darker than that of female; forceps small and black in former; oviduct in latter long and slender, without lamellæ, having the first two joints black on the upper parts, but pale beneath; terminal joint, which is equal in length to the two others (when the oviduct is protruded), yellow. Halteres with

pale stalks and black knobs. Wings clear, only tenderly haired; veins brown, tinged with pink; cubital straight in its whole course, and terminating a little before the apex of the wing; anal vein bent in the middle where the lower branch is given off, which extends in a gentle and even curve to the lower border. The wing closely resembles that of *Cecidomyia iteophila*, figured by Winnertz in Tafel ii., No. 3, but the anal vein is less bent. Legs pale brown, thickly clothed beneath with white hairs; joints and ends of tarsi pink.

R. H. MEADE.

PROCTOTRYPTES ATER, NEES, BRED FROM LARVA OF
CREOPHILUS MAXILLOSUS.

By F. W. FROHAWK.

On October 15th, 1883, I found a larva of *Creophilus maxillosus* lying on a gravel-path, which on closer examination proved to be just dead, and with nine pupæ of *Proctotrypes ater* protruding from its under surface. I then made a sketch of the somewhat unusual-looking mass of insects, from which the accompanying drawing is taken.



PROCTOTRYPTES ATER AND HOST.

The nine *Proctotrypes ater* pupæ were affixed to their host in the curious position shown in the figure, apparently attached only by their anal extremity, and without any cocoon whatever. They were pale ochreous-brown in colour, with the head and thorax dark brown. Some time after, on looking into the box in which I kept them, I found they had all emerged and the perfect insects were dead. Two or three were wingless, but as I did not notice at the time any loose wings in the box, it would be interesting to know from what cause the wings were missing. The perfect insect has the head, thorax, body and antennæ of a deep shining black, and the eyes bright sienna-brown.

Park Place, Eltham, August, 1886

LOCALITIES FOR BEGINNERS.

BY JOHN T. CARRINGTON, F.L.S.

No. X.—ST. GEORGE'S HILLS.

THE excursion I now propose to take my readers—in print—commences from Waterloo Station of the London and South Western Railway, whence we take our tickets for Weybridge, which is nineteen miles from London. There are frequent trains some of which run through in about half an hour without stopping, with return trains up to nearly ten o'clock at night.

On leaving the arrival platform we ascend a number of steps, for the station is in a deep cutting, which at once tells us that the subsoil of the neighbourhood is deep sand. Arrived at the top of the stairs, we see before us a delightful bit of common-land, covered with thick and long heather (*Calluna*), small Scotch firs, and occasional birches, a most encouraging reception for the entomologist. This common extends also north of the station, where there is some broom, much frequented in their season by the larvæ of the commoner of the two *Depressariæ* which affect that shrub. Near this will be seen the only house in the neighbourhood where substantial refreshment can be obtained, the "Hand and Spear" hotel, which is close to the railway-station. Among the rough grass on this northern or Weybridge side of the common, one of the more local species of the genus *Crambus* is said to occur. Excepting this bit of ground, there is no other place on that side of the railway which is worth spending time upon, while so much, and better, may be found in the direction we will now take.

Imagining ourselves again on the south side of the railway-bridge, we take the right hand of the two roads opposite to us, and leading across the common. Following this we come to a low wall bounding a fine fir wood on our right, while on our left are a series of villa residences so characteristic of the wealthy class of people inhabiting the neighbourhood. Continuing forward we come to some large oak-trees, where in early autumn the acorns may be picked up and saved for rearing the imagines of *Carpocapsa splendana*, the larvæ of which are feeding on the earliest-fallen acorns.

As soon as we have passed the last of the villas on the left,

we shall see a gate on the same side, with gate-keeper's lodge. This we enter, and find we are within the beautiful domain of St. George's Hills, as will be discovered by seeing a notice-board on which are painted the rules for regulating the conduct of the public when using the woods. These at first appear stringent, but are by no means unreasonable, and, so far as I have experienced in many visits to the locality, do not in any way interfere with the entomologist who respects the property of his host, for such, for the time being, is the owner who allows him to roam through his woods.

There are several paths diverging from this entrance, all of which are pleasant enough, but we will follow the one opposite to us through the big fir-trees which constitute this portion of the wood. We will not loiter here, but pass forward, all the time keeping a sharp look-out for those insects which delight to rest on the boles of the fir-trees. Among the heather so luxuriantly growing beneath the firs we shall shortly see many of the great ant-hills made by *Formica rufa*, and so dear to the coleopterist who is proof against the irritating stings of the tenants he is sure to evict in his search for the special beetles which inhabit these ant-hills. We have now passed a ride on the right a few hundred yards from the gate, and go on until we come to a valley where our path meets one crossing it at almost right angles. Taking our right-hand path, we ascend the hill opposite, and work our way upwards, all the time making for the "Swiss Cottage," a picturesque little house near the middle of the wood, where tea and cakes are to be had. This may be considered our rendezvous, for much of the best collecting should be found to the north-east of this, where lies a considerable space of high ground with a very mixed herbage and rich undergrowth, and where the woodland partakes of open ground, with willow, hawthorn, and other shrubs and trees covered with festoons of honeysuckle. Many a long day may be profitably and happily spent around here, by those especially who delight in the smaller moths, as well as the Macro-Lepidoptera.

St. George's Hills are largely dedicated to the growth of conifers in the region of the "Swiss Cottage," and many rare and really handsome trees of that group may be seen, including some giant monkey-puzzles (*Araucaria*). Of course Scotch fir abounds all round, but we shall find some immense spruce firs

with large crops of the long and graceful cones, which should contain larvæ of *Eupithecia togata*. These are to be found while the cones are still green in colour, by the aid of a field-glass, which will reveal the frass thrown out by the larvæ, still attached to the unripe cone. To obtain these, however, is quite another matter, and the object is best attained by sending up a small but plucky boy, who may gather them. It may be well to consult the leading woodman upon this subject before attempting the feat, in case a false value be placed upon our proceedings if the small boy is inconveniently discovered at the top of the tree. There are parts of the woods where detached oaks and birches abound, rewarding, in spring, those who search the former for *Amphidasys strataria* (*prodromaria*), many fine examples having from time to time fallen to my lot. These woods are ever pleasant to wander in, but to me especially so in spring-time, when the delicate tints of green of the early leafing birches gladdens the eyes, in contrast with the rich dark green of the firs, and when *Brephos parthenias* merrily flits over the blooming salallows to the joyous sound of multitudes of humming bees.

To the south-east of the "Swiss Cottage" we find a road down the hill-side, bordered with large laurel-bushes; if we follow this we shall in due time come to some collecting-ground of quite another character, where the heath disappears and is replaced by more marshy ground covered with long grass, quite like a Lancashire moss, barring the absence of cotton-grass. Round this moss-like locality is a road on either side, which leads us to another gate, and the one nearest to Cobham Street, which is about half a mile distant, and where at the larger of the two 'White Lions' will be found an interesting old Surrey inn with carefully kept garden, worth visiting. This inn is about four miles from Weybridge Station, but there is one nearer by a couple of miles, at Stoke d'Abernon.

In St. George's Hills one may find plenty to do for a whole day, and get lost, too, if we lose our bearings; but it may be that we should like to know more about the neighbourhood, so we will return to the lodge-gate next Cobham. Here we find that four roads meet; that to the left is to Walton-on-Thames, a very pretty walk; before us is to Cobham; behind us, outside the wood, to Byfleet and Weybridge; and to the right is to the Portsmouth High Road. This we will follow, and at the end we shall

find a large park, with a very long park-fence, worth examining for moths if the wind be from the right direction. At the junction with the high road we turn to the right and follow the high road, with perhaps sundry divergences into the heaths, which are open and free to the collector. Then we shall pass a road bearing to the left, leading to Ockham, where the inn is the "Hautboy and Fiddle." We continue, however, along the high road, and shortly come to a miniature lake to the left of the road. This is the Hut Pond, and is quite a respectable sheet of water; big enough to boat upon, to fish in, and to hunt for *Hydradephaga*, all of which sports may be arranged for on application at the "Hut" tavern, on the opposite side of the road. This again becomes an excellent head quarters for many days work, for it is perfectly surrounded by good collecting-ground, and excursions may be made in many directions. One cannot well get accommodation to stay at the "Hut," though that has been accomplished, when entomological ardour held luxury in wholesome contempt. Behind the "Hut," a little to the westward, is a very wild country, considering its proximity to the Metropolitan district, and here snipe rear their young every year, and I recently found a young brood of woodcocks. There are many marsh plants in this district, one of the prettiest being the little sundew, *Drosera rotundifolia*. Heath-loving moths are in abundance, such as *Eupithecia nanata*, *Anarta myrtilli*, and *Agrotis agathina* may be found by searching the flowers of the heather by lamplight, with *Noctua neglecta* and many others useful for exchange. For this sort of work I should prefer the ground to the left of the road leading to Ockham, as it is dryer and more pleasant to work. The best time to search the heather-flowers is before they are generally out, and only in patches, for when the flowers become general, the space to search is so much more considerable.

If we take the left side of the pond and walk a little southward from the "Hut," we cross the Ockham Road and bear right away to the left: this will bring us to some woods with an abundance of rhododendrons, a sight worth seeing when in flower. Here I have seen the wild-flying *Macroglossa fuciformis* dipping its long proboscis into the deep flowers of these shrubs. This wood is, I suppose, private property and duly preserved, though I have not seen any one in it to ask me to retire, so I propose to continue my visits until I am so requested.

This district is so extensive from an entomologist's point of view that many visits must be taken before it is fully explored; for, given a desire to collect the marsh-loving *Pyrales* and other insects, by passing though Byfleet to the west of St. George's Hills, we come to the meadows near the River Wey and on to the canal-bank, where collecting of an entirely different character is to be found. This makes a pleasant excursion, but not so picturesque as our walks through the woods of St. George's Hills, which for retired wildness are unequalled by anything else within easy reach of London.

Savage Club, Savoy, London, W.C., August 24, 1886.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

PAIRING OF *EPINEPHELE IANIRA* AND *E. HYPERANTHES*.—Whilst collecting at Brockenhurst, on 16th July, I netted the above-mentioned insects, male and female, in the order given, *in coitū*. I showed them alive to my friend Mr. Jenner Weir, who said that he had never observed those two insects to pair before, and judged it worthy of mention.—PERCY RENDALL; 20, Lad-broke Square.

NON-OCCURRENCE OF SPRING BROOD OF *LYCÆNA ARGIADES*.—As many lepidopterists are interested in the occurrence of *Lycæna argiades*, it may be worth noting just now that I and several others have been working on and near the spot where we found a male and female last year, at intervals, since June 19th, but, up to last night, without success. I am not myself so much surprised at this, considering how bad a season it is (at least in this district) for Lepidoptera in general, and especially for the genus *Lycæna*. Up to yesterday (20th inst.) I have not seen fifty specimens of both *L. icarus* and *L. ægon*. I shall continue to look for *L. argiades*; and as *L. icarus* is still coming out, it may yet put in an appearance.—O. P. CAMBRIDGE; Bloxworth Rectory Wareham, August 21, 1886.

XANTHIC VAR. OF *EPINEPHELE TITHONUS*. — Mr. T. H. Waring has shown me a curious xanthic variety of this species, in which the whole of the dark brown of a normal specimen is replaced by cream-colour. The ocelli have the black replaced by

pale brown. It was taken at Fowey, Cornwall. Similar varieties of this and *E. ianira* have been recorded, but can anyone suggest the cause of their appearance? Do they breed true, or affect any particular localities?—T. D. A. COCKERELL; Bedford Park, W., August 11.

SESIA ICHNEUMONIFORMIS IN CAMBRIDGESHIRE. — On July 18th I captured a female *Lophopteryx cuculla* (*cucullina*) near here, which laid a good batch of eggs, from which I am rearing larvæ. Also, on the same day, I took a specimen of *Sesia ichneumoniformis*. To-day I have taken two more of the same *Sesia*. Most moths seem to be at least a month late.—G. E. CRALLAN; Cambridgeshire Asylum, Fulbourn, near Cambridge, August 20, 1886.

NEMEOPHILA PLANTAGINIS DOUBLE-BROODED.—Is *Nemcophila plantaginis* usually double-brooded? I found, as I always do, great numbers on the sandy warrens at my home near Appleby, Lincolnshire, and bred many moths. These laid ova in due course, and I have now another batch of larvæ, which will soon be full-fed. I have not forced them in any way.—ELIZABETH CROSS; Dalchosnie, Rannoch, Perthshire, August 15, 1886.

APAMEA CONNEXA IN SCOTLAND.—Last autumn, when staying with my friend Mr. Watson, he asked me the name of a moth he had taken sitting on the trunk of a tree on the Holy Loch, early in August, 1885, along with *Sarothripus undulatus* (*revayana*). It proved to be a very fine *Apamea connexa*. I think the original British locality for this species is near Barnsley; and his Scotch locality is interesting.—J. B. HODGKINSON; 6, Fishergate Hill, Preston, July 26, 1886.

CIDARIA SIDERATA IN AUGUST.—On the 4th of this month I boxed a fine, brightly-coloured male specimen of *Cidaria siderata* (*psittacata*) at rest on a bank near here. Is not this an unusually early appearance of this insect? — L. SURRAGE; 2, The Esplanade, Minehead, Somerset, August 12, 1886.

IS *TIMANDRA AMATARIA* DOUBLE-BROODED?—On July 1st last I captured three *T. amataria*, one of which laid ten ova (of a deep red colour) on the 7th; they all hatched on the 14th July. On August 2nd one larva spun a very slight web between the dock leaves, upon which I fed them, and turned to the pupa on

leucanthemum, and on examining the plants found about a score the 4th, which disclosed a perfect male imago, August 14th, early morning. Another larva spun up, August 3rd; turned to pupa on the 5th, early morning; and the moth emerged, August 15th, early morning, also a fine male. The remaining eight larvæ are now apparently hybernating, and are about three parts grown. From the above it will be seen that they were only seven days in the ova state, only twenty and a half days in the larval, and ten days in the pupa state; in all being thirty-eight days for the completion of the transformations, from the day the ova were deposited to the emergence of the first perfect insect, which I think must be unusual for *T. amataria*. Never having observed a second brood before, I place these facts on record.—F. W. FROHAWK; Eltham, Kent, August, 1886.

[It is by no means unusual in the case of hybernating larvæ for individuals from a batch of ova laid by one female to outstrip the others in growth and to appear the same autumn, especially if kept warm and liberally fed.—ED.]

DICRORAMPHA DISTINCTANA ON THE ESSEX SALT MARSHES.—When collecting on the sea-wall by a stream in July last year, I disturbed two Tortrices, which I secured. On comparing them with specimens of the genus *Dicrorampha* in my collection, I was unable to identify them with any, so put them aside for future determination. When my friend Mr. C. G. Barrett called here lately, I drew his attention to the specimens, which he said he believed were the above-named species. On forwarding them to him for comparison with his continental types, I had the pleasure of learning that they were the true *Dicrorampha distinctana* of Heinemann. The species is closely allied to *D. plumbagana*, but the markings are more silvery. I tried for it this year, but the weather being unfavourable I was unsuccessful.—W. MACHIN; 29, Carlton Road, Carlton Square, E., August 8, 1886.

DICRORAMPHA DISTINCTANA.—In 1882 I recorded the capture of two examples of a *Dicrorampha*, under the name of *distinctana*, Hein. (Entom. xv. 110). Since that date I have each year had sent me various plants from the locality in North Devonshire, where the insects referred to were taken, but until the present year had not been enabled to elucidate their life-history. On the 24th of May last I received a batch of *Chrysanthemum*

of larvæ feeding in the shoots and buds, after the manner of *Dicrorampha consortana*. Subsequently comparing a full-grown larva with a short description of the larva of *D. consortana*, taken by me at Shanklin, Isle of Wight, in 1879, I found that it agreed exactly therewith. Profiting by my experience with *consortana* larvæ in the Isle of Wight, I selected all the infected shoots of *Chrysanthemum* and placed them in tins. The first imago emerged on July 15th and others at intervals, to the number of fourteen in all between that date and August 7th. The specimens are identical with the two captured in North Devon; and although their brighter ornamentation and more distinct character of marking would seem to separate them from *D. consortana*, still the fact of the larvæ from which they were produced being in structure, appearance, and habit precisely like those of *consortana* proves them to be this species. It follows, then, that if this form of *consortana* is identical with the *distinctana* of Heinemann, as, on the authority of Mr. C. G. Barrett, it is stated to be, the insect should be labelled in our collections as *Dicrorampha consortana* var. *distinctana*, Hein.—RICHARD SOUTH; 12, Abbey Gardens, St. John's Wood.

CHRYSOCLYSTA BIMACULELLA AT WINDERMERE—On July 1st, whilst sweeping for *Nepticula intimella* amongst the willows at Windermere, I was astounded when I saw in my net a magnificent specimen of this lovely insect. The sun was bright and hot, and a good stiff breeze on at the time made it difficult both to see and to get it to settle in the net. It seemed as if it knew it was specially wanted, and took all the breath I could spare to keep blowing it back. When boxed, I remembered the fate that befel some *Lampronia luzella* a day or two before, so I chloroformed it, and secured it safely with a pin. On the 5th I had another hard day, and took a worn female and a gem of a male. All were swept off the willows. It is not every day to be met with, for I spent four days more without success.—J. B. HODGKINSON; 6, Fishergate Hill, Preston, July 16, 1886.

GELECHIA OSSELLA AT ARNSIDE.—Of this rare species I took one specimen each at Arnside and Grange-over-Sands, in July, 1880 and 1883. I had only one old specimen of Wilkinson's. Thanks to Mr. Sang for detecting them mixed up with *Cleodora cytisella* when he was here.—J. B. HODGKINSON.

REARING LARVÆ.—Mr. St. John's plan (Entom. 164) for rearing larvæ is very good. Allow me to suggest to him the desirability of placing some fine moss in the bottom of the glass, say one inch; on the top of that, one inch of fine sand; and above that, one inch of fine moss, such as that found growing on old bushes in hedges (the same as the bird-dealers sell in small bags in the breeding season). The moss should be scalded with hot water, to kill lurking enemies, and then dried. This would come up to the level of the top of a two-ounce squat bottle, a size I have used for the last twenty years, which should be inserted into a tube, as suggested by Mr. Carrington; zinc in preference to tin, for the latter rusts very quickly; and from experience I find stuffing the mouth of the bottle with fine moss far preferable to blotting-paper.—G. C. BIGNELL; Plymouth.

ENEMIES TO THE ENTOMOLOGIST.—Bats, nightjars, and toads have been so long recognised as the sworn enemies of those who go sugaring for moths, that I venture to draw the attention of those who are interested in the above science to a hitherto unrecognised foe, as far as my reading goes. Whilst sugaring last year at Lyndhurst, we were much troubled by the long-tailed field-mice (*Mus sylvaticus*) that frequented our sugared trees, as we thought, at the time, attracted by the luscious liquid we used. Though we noticed that there were never any moths on the same trees, we simply thought that they frightened away the insects, and waged war to the knife against them, finding they only returned when scared away. This year, however, whilst sugaring in Sussex, my greatest fears were confirmed, for one *Mus*, as I was standing quite still with my light thrown full on the sugared bark, came fearlessly into the circle of light, ran round to my side of the tree, sat up, looked at me and then at the tree trunk, up which it ran, and seized a luckless specimen of *Miana strigilis* in its mouth, and ran off with it. After that, I saw at the bottom of more than one of my trees the remains of moths, whose bodies alone had been eaten by the insectivors in question.—PERCY RENDALL; 20, Ladbroke Square, W., Aug. 8.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. — *August 4th, 1886.*
 Prof. J. O. Westwood, M.A., F.L.S., Hon. Life-President, in the chair. The following gentlemen were elected Fellows, *viz.*:—
 Lord Dormer, Mr. J. H. A. Jenner, Mr. James Edwards, Mr. Morris Young, Mr. F. V. Theobald, Mr. E. A. Atmore, and Mr. William Saunders, President of the Entomological Society of Ontario. Mr. Theodore Wood exhibited and made remarks on the following Coleoptera, *viz.*:—An abnormal specimen of *Apion pallipes*, with a tooth upon the right posterior femur; a series of *Langelangdia anophthalmi* from St. Peter's, Kent, taken in decaying seed-potatoes; a series of *Adelops Wollastoni* (Janson), and *Anommatus 12-striatus*, also from decaying seed potatoes; and a series of *Barypeithes pellucidus* (Boh.), from the sea-shore near Margate. Mr. Wood also exhibited, on behalf of Dr. Ellis, of Liverpool, a specimen of *Apion annulipes* (Wenck). Prof. Westwood exhibited five specimens of a species of *Culex*, supposed to be either *C. cantans* or *C. lateralis*, sent to him by Mr. Douglas, who had received them from the Kent Waterworks. It was stated that they had been very numerous in July last, and that persons bitten by them had suffered from "terrible swellings." Prof. Westwood also exhibited some galls found inside an acorn at Cannes in January last. Mr. Billups exhibited a male and female of *Cleptes nitidula* (Latr.) taken in copulâ in July last, at Benfleet, Essex, on the flowers of *Heracleum sphondylium*. He stated that it was probably the rarest of the twenty-two known species of British *Chrysididæ*, though it had been recorded from the New Forest and from Suffolk. Prof. Westwood, the Rev. W. W. Fowler, Mr. Fitch, and Mr. Champion, made some remarks on the species. The Rev. W. W. Fowler announced that a series of specimens of *Homalium rugulipenne* (Rye) had been received from Dr. Ellis, of Liverpool, for distribution amongst members of the Society. Mr. White exhibited a group of three specimens of *Lucanus cervus* consisting of a female and two males. The female was in copulâ with one of the males, which, while so engaged, was attacked by the second male. Mr. E. A. Fitch read a paper, communicated by Mr. G. Bowdler Buckton, "On the occurrence in Britain of some undescribed *Aphides*." The paper was

illustrated by coloured drawings. Prof. Westwood read a paper "On a Tube-making Homopterous Insect from Ceylon." Mr. Theodore Wood read a paper "On *Bruchus*-infested Beans." A discussion ensued, in which Prof. Westwood, the Rev. W. W. Fowler, Messrs. Fitch, Weir, Trimen and others took part.—H. Goss, *Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*August 5th, 1886.* J. Jenner Weir, Esq., F.L.S., in the chair. Messrs. A. W. Spanton, W. Manger, and W. Powley, M.A., were elected members of the Society. Mr. W. West exhibited *Eugonia autumnaria*, and bred specimens of *Ocneria dispar*. Some discussion took place as to the disappearance of this insect in the wild state from this country, in the course of which Mr. Chaney stated that he once took a specimen in a wood near Chatham about thirty years ago, and a friend of his, Mr. J. J. Walker, took a specimen about fifteen years ago at Chattenden. Mr. Wellman exhibited specimens of *Dianthæcia albigula*, from Folkestone; series of *Epione parallelaria* (*vespertina*), and *E. apiciaria*. With reference to *E. parallelaria* Mr. Weir remarked that he understood it would probably become extinct in this country, as the place where it was obtained was likely to be cultivated. Mr. Carrington said that, as an old captor of this insect, he did not think that its extinction was immediately probable; and he contributed notes on the locality and habits of the species. Mr. Goldthwaite exhibited a singular variety of the male of *Ematurga atomaria*; a striking xanthic variety of *Lycæna minima*, from West Horsley; dark forms of *Xylophasia monoglypha* (*polyodon*), from the Lake District, which he stated was, in consequence of bad weather, almost the only result of twelve days' work. Mr. C. Oldham, a large number of varieties of *Abraxas grossulariata*, bred from pupæ found in Cambridge-shire. The series showed a larger range of variation than is usually seen among a quantity bred haphazard. Several members contributed notes of their experiences in breeding varieties of this species. Mr. J. J. Weir exhibited five beautiful varieties of *Argynnis paphia*, among which was a melanic variety of *paphia* properly so-called; and a very green form of the variety *valezina*. Mr. J. Carpenter exhibited a larva of *Heptamelus virescens* from Titatapu Bush, near Rotorna, New Zealand, with a very fine example of the well-known fungus, *Cordiceps robertsii*,

growing from the larva. Mr. West, of Greenwich, several species of rare northern Coleoptera taken by Mr. Tugwell in Braemar. Mr. Billups exhibited male and female specimens of *Cleptes nitidula*, and read a short paper with reference to his exhibit. He also exhibited *Chrysis succincta*, taken at Chobham, on July 28th, on the bloom of the wild carrot (*Daucus carota*), and stated that this rare species of the *Chrysididæ* was only recorded as having been taken some fifty years since, by Messrs. Dale and Rudd in Hampshire, and the late Mr. Fred. Smith had only met with it twice, and then in the same county.

August 19th, 1886. The Vice-President in the chair. The Rev. H. C. Lang, M.D., F.L.S., and Mr. J. M. Adye, were elected members. Mr. Sheldon exhibited bred series of *Eupithecia pimpinellata*, *Conchylis dilucidana*, *Grapholita geminana*, *Ephippiphora cirsiana* (bred from thistle-stems), *E. fænella*, and some interesting forms of *Xanthosetia zægana*, from Hackney Marshes. Mr. Wellman, a series of *Acidalia emarginata*, bred from ova. Mr. J. J. Weir, xanthic varieties of *Erebia epiphron*, *Epinephele ianira*, *Satyrus semele*, *Cœnonympha pamphilus*, a very pale *Polyommatus phlæas*, and a light specimen of *Eubolia bipunctaria*. Mr. J. A. Cooper, *Erastria venustula*, *Stigmonota roseticolana*, a long series of *Argyrolepis badiana*; with reference to this insect Mr. Cooper stated that both Mr. Stainton and Mr. Merrin gave the food-plant as the roots and stems of burdock (*Arctium lappa*), but he had searched carefully and had been unable to find any larvæ, either in the stems or roots, although he had found them plentifully in the seed-heads of the plant from which those now exhibited were bred. This gentleman also exhibited varieties of *Spilosoma menthastri* and *Phorodesma smaragdaria*, bred from larvæ found in the Essex salt-marshes. Mr. Jobson also exhibited *P. smaragdaria*, the larvæ having been obtained from the same locality; *Erastria venustula*, bred from ova; and *Lobophora sexalidata*. Mr. J. T. Williams, *Ilithyia carnella*, an almost albino variety of *Acidalia bisetata*; and a variety of *Larentia olivata* having the whole of the base of the wings suffused as far as the band. Mr. Helps, *Boarmia repandata*, var. *conversaria*. Mr. C. Oldham, varieties of *Calymnia trapezina*, and examples of the second brood of *Lycena argiolus* and ova. Mr. Mera, pale and dark varieties of *Abraxas grossulariata*. Mr. Frohawk, *Timandra amatoria* bred from ova laid on the 7th

July last, and coloured drawings of the larva and pupa. Mr. Goldthwaite, a bred series of *Scotosia vetulata*; black formso: *Eupithecia rectangulata*; and a long series of *Nudaria mundana*.
—H. W. BARKER, W. A. PEARCE, Hon. Secs.

REVIEWS.

The Naturalist's Diary: a Day-book of Meteorology, Phenology, and Rural Biology. Arranged and edited by CHARLES ROBERTS, F.R.C.S., &c. London, 1886: Swan, Sonpenschein & Co.

THIS is a spirited stride away from the well-worn track followed by ordinary diary-makers. So marked indeed is the difference that Mr. Roberts's system is worthy of serious study and lengthened consideration. It is no mere series of pages, though there is a page per diem for entering the names of animals observed on a particular day; but a carefully prepared guide for scientific record of observations, based upon the study of phenology, and the "interdependence of a wide range of natural phenomena;" in other words, examining the relations which exist between the meteorological and organic phenomena around us and their dependence on each other.

"Calculations are given which show the degrees of shade temperature above 42° F. (the assumed zero of vegetation) for each day, and the accumulated temperature from day to day throughout the year; and the rainfall is dealt with in a similar manner. In this way, and as far as the average of twenty years can be trusted, the heat and moisture equivalents of about three hundred British wild plants and trees have been determined; and these plants have become in their turn standards for estimating the same conditions in other plants which have not been under observation, but which grow and blossom under similar atmospheric and physical surroundings. Thus the plants which blossom on May 4th required an accumulated temperature (above 42°) of 479° F. and an accumulated rainfall of eleven inches, to bring them to that condition, and in fact their blossoming, either on that or on any other day, shows that there has been an accumulated temperature and moisture to the amount just stated."

In a like manner do these correlations extend to insects and other animals, so that to the entomologist this field of study is open, and will be found much more interesting than the mere

collecting of insects for cabinet specimens. It will be urged that to succeed in these investigations the observer should live in the country and have leisure time at command. This is by no means necessary, for nearly all who study Entomology from a point of view beyond mere collecting, live in localities sufficiently suburban to carry on some observations of value.

"Theoretically the diary should begin the day after the winter solstice (*i.e.*, December 22nd), but in our latitudes the climate lags behind the sun's movements. . . . The middle of February, St. Valentine's Day, may be accepted as the beginning of the biological year, and the diary should be kept round the year from that time."

Preceding the diary proper is a very interesting Introduction, the thirty-two pages of which will be found well worth reading, including the Preface. Even if disinclined to encounter the tie of regular observations necessary for the successful results to be obtained by this system, the reader will find much in this Introduction for thoughtful consideration.

At the beginning is a coloured map, of very great interest, and it is only to be regretted that the observations hitherto made extend over such comparatively small area. The map represents a "spring chart," constructed for April flowering plants on the European continent. By the coloured patches we see at a glance the relative values of various localities as to whether "late" or "early," and it will surprise many of our readers to find that the Devonshire south coast is equal with the north-west coast of Italy in the flowering time of the same plants. The map, however, is still very incomplete in localities where observations could have been taken, though enough is shown to prove its value. If we can follow the same lines of observation with regard to insects, a map showing the appearance of any certain group of species would prove of the greatest value in suggesting solutions for problems at present conspicuous for their darkness and obscurity.

Mr. Roberts is much to be congratulated upon the first issue of what may be playfully called a "Nature's Birth-day Book," and we feel quite satisfied that as the work becomes better understood and appreciated, its adoption, with perhaps some slight modification, will become general.

It is hardly worth while to refer to certain apparent incongruities in the compilation of the pages of the diary, such as the

use of English names for insects, for we know that it is rather a hobby of Mr. Roberts's to establish a fixed code of English names for everything occurring in Britain ; but where is the advantage ? It is just as easy for anyone to learn the scientific name of a moth as *Apamea unanimitis* as its English sobriquet of the "uniform rustic," while our continental correspondents may be glad to hear that we can send them curious local forms of the former which would fail to reach their understanding as the latter. There is no hope of our establishing an English nomenclature for British insects, for even now, in closely associated localities, a common moth like *Arctia caia* is as frequently known as "woolly bear," "'airy wurm," or "tiger," according to its stage of existence.

Apart from such small matters, which may, and probably will, be set right in the next edition, the 'Naturalists' Diary' is a book which every entomologist should obtain, for though at the moment he may shirk the labour attendant upon keeping it systematically, he may alter his opinion after digesting the Introduction and map.—J. T. C.

Proceedings of the Dorset Natural History and Antiquarian Field Club. Vol. VII. Sherborne.

THIS volume refers to the work done during 1885, and is quite up to the excellent standard of the later issues of the series. The Club, we find from the annual report, was in prosperous condition, with assets to the extent of about £140 to the good.

The entomological work done is limited, but such as there is of much interest, especially the further full remarks by the Rev. O. P. Cambridge upon *Lycæna argiades*, which paper is illustrated by a handsome coloured plate, with two upper- and two under-sides of this species ; and a spray of the greater bird's-foot trefoil, *Lotus major*, which grows abundantly where the Dorset specimen of *L. argiades* occurred. Mr. Cambridge thinks this will probably be the food-plant of that butterfly in this country. There is an illustrated paper, by Mr. O. P. Cambridge, on "New and Rare British Spiders," which should not be lost sight of by those who are working this group of animals.—J. T. C.

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ENTOMOLOGY IN NORTH LANCASHIRE.

BY J. ARKLE.

THE result of some cogitation as to where I should spend the last two weeks of a July holiday was to find myself a temporary resident in the little town of Morecambe. To North-country entomologists especially it may be interesting to know my experience of this neighbourhood, so rich in insect life. My captures were by no means extraordinary, but they are worth recording, as evidence of what may be done in North Lancashire, even under climatic conditions the reverse of favourable. I was fortunate in obtaining an introduction to Mr. H. Murray, of Morecambe and Carnforth, whose splendid collection afforded me so much pleasure, and whose kind directions and personal guidance resulted in most enjoyable excursions amongst the local Lepidoptera. To begin with, I will take Heysham Moss, a peat-moss covered with heath and fern, bog-myrtle and willow, situated along the shore, some three or four miles south of Morecambe. We take the turnpike-road for a mile and a half, pass the 'Cumberland View' Inn, turn down the first lane on the left, then the first on the right to a farmhouse where permission is given to cross a field or two between us and the Moss. On the willows past the homestead and still in the lane, we took larvæ of *Dicranura vinula*, while, hanging from the nettles, were pupæ of *Vanessa urticæ*. A few captures were made here of *Epinephele tithonus*, while *E. ianira*, *Pieris rapæ*, and *Lycæna icarus* were sporting around, and, as a rule, allowed

to sport unmolested. It is evident that the Moss once stretched almost as far as the eye can reach, and that the encroaching cornfields will, in time, compel *Cænonympha typhon* to seek another home, but this year *C. typhon* was on the wing in dozens. *Carsia paludata* (*imbutata*) rushes from the heath at almost every step; *Anarta myrtilli*, *Saturnia paronia* (*carpini*) and *Bombyx quercus* challenge us to the chase. Such were the goodly company during last July, and I need not add that hostages are present with me as evidence of the fact. As we return we carefully examined the stone walls on the Morecambe road for *Bryophila perla*, where it rests in numbers during the day. With the aid of a friend I took a score on the walls of the railway-station alone.

An account of our minor entomological rambles among the lovely scenery skirting the shores of Morecambe Bay would be beyond the scope of this narrative. One expedition, however, to the Witherslack Mosses, on the north or opposite shore, deserves special reference. Early one morning in the very last days of the month, and under the leadership of Mr. Murray, I started on foot for Hest Bank, distant $2\frac{1}{2}$ miles along a part of the coast, which would well repay an evening visit. There is a fairly good footpath on the edge of the shingle. At Hest Bank railway-station we were joined by a Lancaster friend. After seating ourselves in the train we were soon rushing past Carnforth, Silverdale, and Arnside,—each well worth a day's visit,—and so on to Grange-over-Sands, where *Lycæna corydon*, I was informed, sports in profusion during the season. I may add that *L. argiolus* is said to be common enough at Arnside, while at Silverdale and Carnforth are *Argynnis aglaia*, *A. adippe*, *A. euphrosyne*, *A. selene*, and *Melitæa artemis*. At Arnside I took *Lycæna icarus*, *Cænonympha pamphilus*, *Lycæna astrarche* (*agestis*), and *Anaitis plagiata*.

At Grange-over-Sands we terminated the railway part of our excursion, and took the high-road almost due north for the village of Lindale. All along the road the rough ground on each side of the fences should be well worked, especially a rocky, boggy bit over the right fence, where *A. plagiata* occurs, and a young larch plantation over the left, commencing with a quarry, where the region of *Erebia æthiops* (*blandina*) seems centred. There are plenty of willows in the fences, where we again took

the larvæ of *D. vinula*. In the larch plantation we chased a fritillary—probably *Argynnis adippe*; but by this time the sunshine of the early morning had given place to a gloomy and thundery sky.

Time, if little else, was on the wing, and we were therefore compelled to quicken our pace in the direction of Lindale. Here is the 'Commercial' Inn, where we lunched. Being on the very edge of the Witherslack Mosses no time was lost, so crossing the road we struck through a few yards of field into ground covered with heath, young birches and Scotch firs. It was a warm, sheltered part of the moss, and teemed with insect life. *Anarta myrtilli* scudded about in every direction, but so swift and eccentric is the flight of this beautiful insect that of the scores we saw, only half a dozen were netted. *Nemophila plantaginis* and *N. russula*—the former in splendid condition—were also plentiful. Our direction was now north-east and then north-west across the first moss, where we still kept on netting *plantaginis*. *Cænonympha typhon* was plentiful enough, but as the season for it was nearly over, the specimens captured were nearly always rubbed and worn. The whole of the mosses I visited in the Morecambe district, however, are evidently rich in beautiful varieties of this insect, chiefly dark forms. At intervals we came across swarms of *L. ægon*, the blue silvery spots under the wings being very distinctly marked—in fact, this lovely little butterfly was in splendid condition. Had the afternoon been sunny instead of dull, we should have doubtless seen it in greater numbers. Like *C. typhon*, however, it had to be raised by our footsteps from the heath. A fact that particularly struck me in connection with *C. typhon* was, that wherever I found it *C. pamphilus* was absent, and *vice versâ*. If the fact has been noticed by readers of the 'Entomologist' I should like to see an explanation.

Between this moss and the next, a much smaller one, there are two or three intervening cornfields. Our course had now become north-west, in the direction of the village of Newton, where the 'Derby Arms' is a well-known resort for entomologists. We got through the cornfields by skirting the hedges, in which buckthorn grows profusely. Along these hedges *Gonepteryx rhamni* will wing his flight in the coming October, and again in May.

After lingering here and there to feast on the splendid crops of wild raspberries, we reached Moss No. 2; but the day was done as far as netting was concerned, so we crossed into the road that leads down on the left to Newton, with a look of regret on Moss No. 3 and continuations stretching right away to the sky-line. Once in the road we also gave up the idea of following the turnpike north from the village, where, among the heath and bush and bramble on the hillside only a few yards away, *Argynnis paphia*, *A. adippe*, and others of the genus find their home. A hundred yards or so from the 'Derby Arms' in the opposite direction, but on the same Lindale Road and at the base of the hilly ground on the wayside, is a rough patch where, on another occasion, we took *Lycæna astrarche* in profusion. We gave it a quarter of an hour, only to find every butterfly quiet and beyond disturbance in the deepening gloom. So we retraced our steps to the inn and commenced our journey homeward, by the lane we struck into after parting with the second moss. Here I have to record our last capture,—a full-fed and numerous brood of *Vanessa io* larvæ on the way-side nettles,—a large proportion of which were duly boxed. After a mile or so we left the lane and struck off at a right angle through some fields to the embankment guarding the estuary of the River Kent. This embankment is the haunt of countless *Zygæna filipendulæ* in the month of June. At Methop Head we crossed the estuary by walking along the viaduct to Arnside railway-station, and so closed a most enjoyable and eventful day.

2, George Street, Chester, August 26, 1886.

MICRO-LEPIDOPTERA IN 1886.

By J. B. HODGKINSON.

I TAKE the following stray notes from my memory of such work as I have done during the past season in my neighbourhood, but I should add that for the past four years I have been more or less an invalid, and during March and April last I could do no collecting, having then had a narrow escape from visiting other "happy hunting grounds."

My first captures for the season were some *Elachista* larvæ, which I expected would produce *E. atricomella*, but they all

turned out to be *E. luticomella*. All the month of May was cold and cheerless, as was most of June. In the last week of the latter month I had the pleasure of a visit from Mr. Sang, of Darlington, who came specially to take *Nemophora pilella*. We fortunately had a little sunshine, which tempted us to try for this moth; but on arrival at the ground everything was saturated with wet, and we only took about eighteen specimens; we added, however, to our bag some two or three dozen *Gelechia longicornis*.

My next ramble was to Carlisle in Whitsun-week, but the cold was very trying. I made two journeys to my old hunting-grounds near Arnthwaite, where I took in the two visits three moths, viz., one *Coccyx distinctana*, one *Eupæcilia nana*, and one *Tinea semirufella*! Mr. Threlfall had told me where to find the larvæ of *Coleophora olivaceella*, and with patient work I managed to take enough to breed a series. The rest of June was cold and windy, but I made a visit to Morecambe Bay for the larvæ of *Plutella annulatella*, but I had little success; the only moths I got were some splendid specimens of *Eupæcilia atricapitana*.

In July the weather improved. During the last week of June I went to Windermere, and went to work with a will to take *Nepticula intimella*, where I had noticed traces of it for the past twenty years. Lots of species of the genera *Lithocolletis* and *Ornix* were to be seen, but the specimens were generally in bad condition. Still, by working hard, I took an extraordinary number of species of these genera, and was pleased to find how long some of them remained out,—quite a fortnight,—perhaps on account of the superb weather we got during the time. I took eighteen species of *Lithocolletis*, the best being *L. distinctella*, a few *L. amyotella*, *L. kleemannella* (mostly bred). *Nepticula aucupariæ* remained out three weeks, and I took it in company with *N. intimella*, making up my series of a couple of dozens of the latter and four or five *N. continuella*. I have still many to determine, and possibly one new one. By sweeping the tops of the birches, willows, and mountain-ash shrubs I got half a hundred *Tinagma resplendella*, though, oddly enough, I got hardly any off alder, though this was mixed closely up with the others. After rest and refreshment, for the heat was sometimes intense, I came upon some *Ennychia octomaculata*. Finding a nice patch of golden-rod, I made search for *Leioptilus osteo-*

dactylus and *L. tephradactylus*, and got lots of the former with a few of the latter. One day, at about four o'clock p.m., I found *Lampronia luzella* flying, and took about eight examples; they are difficult to see, and soon spoil themselves if not set at once. While taking these one had to beware of *L. rubiella*, which affect the raspberries growing near by. *Phoxopteryx diminutana* occasionally turned up, but were frequently worn. My great prize on this occasion was *Chrysoclysta bimaculella* and several *C. schrankella* among *Epilobium*. I notice that Desvignes says he beat *C. bimaculella* out of sallow; also the late Mr. Benjamin Cooke got one on Chat Moss from sallow, but there were probably willow herbs growing near. I met also with *Laverna lacteella* and *L. paludicolella*. I searched well for *Eupithecia plumbeolata*, but failed to find it, though formerly I always got it about the 6th of July. I got, however, three *Coleophora wilkinsoni*, and, better still, as many *C. orbitella*, from among birches. I got a number of *Tinea bistrigella*. *Swammerdamia griseocapitella* was very common, and *Ornix loganella* was not rare but rather late, as was *Nepticula betulicolella*. *Scopariæ* were fairly common, but I only took one *S. conspicualis*. *Olindia ulmana* was exceptionally large and fine; in fact, this applied to most species. *Hypermezia cruciana* was exceptionally large. I took a pair of what appears to be the latter species, but if so, of a curious variety, both being bright and rich brown in colour. They were *in copulâ*, which seemed odd, for I saw no others like them.

Between the 9th and 21st July I visited Arnside, and there found a new locality for *Phothedes captiuncula*, while last year I took this species as early as the 5th June at Witherslack. The 1st of August found me looking again for larvæ of *Nepticula intimella*, but only five were obtained. The larvæ of *Eupithecia valerianata* were common at this date. Shortly after this I went for a fortnight to the Isle of Man, and near Port Erin found, by working day by day, a couple of hundred larvæ of *Eupithecia distinctata* on the wild thyme. While in the island I saw an injured *Chærocampa celerio*, which had been taken on Douglas Head. Female *Lycæna icarus* were remarkably large, and there was a considerable range of variation of the spots on the under side. Several *Epinephele ianira* had double white spots in the darker ones.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

ANOSIA PLEXIPPUS NEAR SWANAGE.—I enclose the following particulars of a butterfly found here on August 19th last, about a quarter of a mile from the sea-coast. The body is about three-quarters of an inch long, the wings being four inches from tip to tip when extended. The wings are very distinctly marked with black veins, the intervening spaces being of a tawny orange colour. As I had never before captured a similar specimen, and finding it exactly like one I had received from South America, I submitted it to a distinguished entomologist staying in the neighbourhood, who informs me that it is *Anosia plexippus*, which is an inhabitant of Canada. It is curious that this butterfly should be found here, as there is absolutely no direct trade with America.—J. E. MOWLEM; Swanage, September 9, 1886. [If our correspondent will refer to the February number of the 'Entomologist' (p. 26), he will find this species figured, and an account of several which were taken in England last year.—ED.]

PIERIS BRASSICÆ.—The large white has been comparatively scarce this season (Entom. 174). I do not think I have seen more than a dozen specimens since May last. The wet weather experienced in the spring may partially account for it.—W. HARCOURT BATH; Sutton Coldfield, September, 1886.

FOOD-PLANTS OF MELITEA ATHALIA.—In the 'Entomologist,' (Entom. ii. 244) the late Mr. E. Newman says, "I am indebted to Mr. Bignell for a liberal supply of this local larva, which appears to be hitherto unknown to British entomologists," I first became acquainted with this larva in 1864, and in May, 1865, sent those mentioned above; these larvæ were found feeding on *Plantago lanceolata* (narrow-leaved plantain), and *Veronica chamædrys* (germander speedwell). The butterfly remained in this locality for five years; since that time I have not been able to obtain a single caterpillar, and but few imagines. — G. C. BIGNELL; Stonehouse, June 2, 1886.

EUCHLOE CARDAMINES IN AUTUMN.—On the 18th August I caught a much damaged specimen of *E. cardamines* in Bohemia Road, St. Leonards-on-Sea. Can any reader of the 'Entomologist' account for this late appearance?—A. G. FIELD; Aug., 1886.

VANESSA ANTIOPA IN ESSEX.—A perfect specimen of *V. antiopa* was taken on Sept. 9th by a gardener in a greenhouse in my garden.—W. H. PEMBERTON-BARNES; Havering-atte-Bower, Essex.

VARIETY OF LYCÆNA BELLARGUS.—I have paid two visits this month to the locality in which I took the varieties mentioned in my note of June last (Entom. 176); and although the autumn brood of this species was a very scanty one indeed, I should say hardly a tenth part of the number seen in the spring, I yet was fortunate enough to meet with a pair on each occasion, similar in every respect, save size, to those previously recorded. One of the females was much worn, and one of the males somewhat crippled, as was the case with two of the former captures; but the other pair were in very fine condition, although not so large as the spring ones. If all be well I hope to meet with this variety again next spring, as I should fancy the form is a permanent one and peculiar to this spot, never having met with it before at other places that I have visited; still others may, perhaps, have done so, and I should be pleased to compare notes. I may add that I have never till this season worked this locality for *L. bellargus*.—E. SABINE; 22, The Villas, Erith, September, 1886.

STRIDULATION OF ACHERONTIA ATROPOS.—In the 'Entomologist,' p. 148, Mr. South is so good as to call attention to some former notes of mine on this, the grandest of our Sphingidæ; and having just bred a few specimens I am induced to add a few supplementary remarks. Here, as in divers other parts of the country, the larvæ of *Acherontia atropos* were last season more than usually abundant, and I became possessed of a goodly number. I took much pains in rearing them, feeding them on their usual pabulum—potato-leaves; and with one or two exceptions all went down into the earth, with which I filled some immense flower-pots on their behalf. I should like to make the enquiry why some larvæ so resolutely refuse to bury themselves, roaming restlessly round and round, seeking a place of egress, whilst others will as readily penetrate the soil? This was also the case with some larvæ of *Asteroscopus nubeculosa*, which I reared from ova sent me from Rannoch this year. Not a moth emerged last autumn; and when June and the greater part of July had passed without a single imago, I began to fear that all had perished. I may say that in December I turned the pupæ out of the flower-pots, and placed them in tins filled with

cocoa-nut fibre, where they remained for the winter and spring. At the end of May they were deposited in moss in the breeding-cage, which was kept in our little conservatory. However, on July 20th I was much pleased to see a fine specimen had come out; some days later there was another. On the 26th, three; one unfortunately with one of the anterior wings slightly deformed. After four days, again another made its appearance; and on the 3rd August two more. All of them were females, and each insect was a veritable squeaker. To kill them I always catch hold of them at the base of the wings, and apply a camel's-hair brush steeped in chloroform to the proboscis, a proceeding to which they strongly object, crying out as loudly as possible against it. A fact worth recording occurred, when on the last-mentioned date the two specimens were in the cage together. No sooner had I caught hold of the one moth, and it had commenced squeaking out its protestations, than its companion crawled on to my fingers, and could with difficulty be disengaged; but not thinking the wings of this one sufficiently dried, I did not then wish to put it to death, and gave it accordingly a brief respite. From the circumstance just narrated it would appear that the cry is distinguished as a means of communication between the insects. I think there is no doubt that the sound is caused by the proboscis rubbing against the palpi, though I am disposed to believe that the friction of some parts of the thorax may have somewhat to do with it. But as I have previously stated—and each time that I have repeated the experiment the experience was confirmatory—as soon as the proboscis is pressed down the squeaking ceases. Up to the present time no more moths have emerged.—JOSEPH ANDERSON, jun.; Chichester, August 10, 1886.

ACHERONTIA ATROPOS.—I was fortunate enough to secure three larvæ of the above last autumn; two died in the winter in the pupa state; and on July 24th a perfect specimen emerged from the remaining one. Is not this very late?—W. E. BUTLER; 91, Chatham Street, Reading, August 10, 1886.

SPHINX CONVULVULI IN ABERDEENSHIRE.—On 6th September a fine female specimen of the above species was captured, and brought to me by my brother, who found it sitting among grass at the road-side near Pitcaple.—W. REID; Pitcaple, Aberdeen, N.B.

DEILEPHILA EUPHORBIAE IN CHESHIRE.—I have had a specimen of *Deilephila euphorbiae* brought to me, which was caught at Bowdon this season. Evidently the larva had fed near where the moth was found, as both wings are crippled on the right side; therefore it could not fly.—J. CHAPPELL; 29, Welbeck Street, Chorlton-on-Medlock, Manchester, September 1, 1886.

CHÆROCAMPA NERII IN SUSSEX.—I had the pleasure to-day of capturing a fine specimen of *Chærocampa nerii* in the front garden of a cottage in Kensington Gardens, about three o'clock in the afternoon. The insect was at rest, suspended from the stalk of a lily bud. About a quarter of an hour later I called on a friend, Mr. F. Trangmar, who at once recognised the insect, which was still alive.—T. LANGLEY; 7, Elder Place, Brighton, September 7, 1886.

SMERINTHUS OCELLATUS.—The larvæ of this moth are unusually abundant this year on the wild crab. I took half a dozen during a short walk, and while shooting could have taken a dozen more.—G. M. A. HEWETT; South Searle Vicarage, Newark.

CALLIMORPHA HERA IN SOUTH DEVON.—Being anxious to settle the question as to the doubtful nativity of *Callimorpha hera* in Devonshire, during the month of August I again worked the locality of Dawlish for this species, and was well rewarded, having been successful in taking some fine specimens. My first observation took place on August 19th, when one (a yellow variety) unfortunately escaped. August 26th, one (normal type) was brought me by a boy from Starcross. August 27th I took three fine ones, another on Aug. 28th, and one more by a boy. These were all taken within two miles of Starcross, but in different places. On Aug. 31st one (yellow) was taken at light by a signalman of Teignmouth, some five miles from the other locality; and lastly, on Sept. 5th a lady friend saw one settled on a window of St. Mark's Church, Dawlish, and she succeeded in capturing it after service. After this experience I must give it as my opinion that *C. hera* may now be considered as indigenous to the coast of South Devon.—J. JAGER; 180, Kensington Park Road, Notting Hill, W., September, 1886.

OCNERIA DISPAR.—I have frequently bred this insect from the small larval stage. They have invariably pupated well; but on the perfect insects emerging nearly four out of five females have

proved to be crippled. The males always come out better. Most of the imperfect females are not badly crippled, but simply at the ends of the wings; in some cases only the hind wings. I have tried to guard against these perpetual cripples, but have as yet failed. Can any reader kindly suggest why?—J. SEYMOUR ST. JOHN; Chalfont St. Peter, Slough, September, 1886.

ABNORMAL EMERGENCE OF SATURNIA PAVONIA.—I was greatly astonished last Thursday at having an unusually large and fine male specimen of this moth emerge in one of my breeding-cages. It was from one of several pupæ, the larvæ of which pupated last August. All failed to appear in the spring, and were, therefore, I thought, lying over till next year. Surely the appearance of *S. pavonia* in August is a somewhat uncommon occurrence? The pupæ have all along been kept in a room without a fire.—W. H. BLABER; Beckworth, Lindfield, Sussex, August 16, 1886.

ACRONYCTA ACERIS.—I find no record of a second brood of this moth. On the 11th of this month (September) I took two specimens at sugar, both quite fresh, but very unlike the early brood, being a dull greenish yellow instead of the pure grey of the earlier lot.—G. M. A. HEWETT; South Searle Vicarage, Newark.

BREEDING CIDARIA RETICULATA AND PENTHINA POSTREMANA.—After five years very hard searching for *C. reticulata* in the Lake District of the North of England, I have at last succeeded in finding it. Last autumn I had the good fortune to take thirteen larvæ of *Cidaria reticulata* and *Penthina postremana*. From them I have bred six good specimens and two cripples of the former, and four specimens of *P. postremana*. I find with the breeding of *Cidaria reticulata* there are more than usual difficulties to contend with, when rearing the larvæ at any distance from its food-plant, *Impatiens noli-me-tangere*. This plant, when gathered, is very unsuitable for travelling far, because if the least exposed to air it rapidly shrivels up, and when confined too closely soon turns mouldy. It grows in very wet boggy places, so there must be a fresh supply of plant obtained every day to ensure any success with the larvæ. Although I do not live far from its locality I found this a great drawback. The larvæ were very unwilling to partake of food more than a day old; it was therefore no use taking more than one plant at once; and further, if I had done so I should soon have taken

them all. The small bed of the plants I found is not many yards square, and, although the ground seems as suitable for it for twenty yards round, it does not seem to spread. I knew the place where Mr. Hodgkinson, of Preston, used to take the larvæ, but I could never find one there. I think I made a very good start with this much-wanted species, for Mr. Hodgkinson tells me he never did so well from the same number of larvæ; but I have not so far to go for the food-plant as he has. I was a little disappointed at only breeding four *P. postrema*. This is very bad, but I think is owing to their not being kept out of doors.—H. MURRAY; 20, Queen Street, Morecambe, September, 1886.

[Of the 130 or 140 species of *Impatiens* known to botanists only one, *I. noli-me-tangere*, is a native of temperate Europe. The British stations for this plant are probably few in number and of small extent individually. It is known to occur as a wildling in mountainous parts of Lancashire, Westmoreland, and North Wales. Mr. Meek observed the plant in Merionethshire this year, and found a larva thereon, which he believes to be that of *Cidaria reticulata*. Species of *Impatiens* are included among the tender annuals raised by the lover of flowers. They may also be purchased in full bloom of the florist, or the “all a-bloin’ and a-groin’” coster, for a small sum. There is, too, a tall and more robust species which has lately become quite a feature in many gardens in and around London, as also in the country. Possibly this last, or even the less hardy plants, would be found to afford a suitable pabulum for the larvæ of *Cidaria reticulata* or *Penthina postrema*, in which case the entomologist who may obtain either or both larvæ would be saved considerable trouble in the matter of food supply and at the same time the risk of destroying the plant in any of its stations would be avoided.—R. S.]

APAMEA CONNEXA.—Could any of your readers tell me whether the larva of this insect has yet been discovered, and if so, where I can find a description of it? Many old entomologists, resident here, tell me that thousands of *A. connexa* have passed through their hands, but not one of them ever had the fortune to obtain ova.—A. E. HALL; Norbury, Pitsmore, Sheffield, Sept., 1886.

[“The larva is blackish, lighter above, with a pale line on the back; it feeds on grass in April” (Kirby, ‘European Butterflies and Moths’).]

MIANA CAPTIUNCULA (EXPOLITA) AT ARNSIDE.—Early in July I struck a moth, going with the wind at a furious rate, while collecting at Arnside, near Grange-over-Sands. Judge of my surprise when I saw it was *M. captiuncula*. I was boxing it, when a gentleman, who preserves the game thereabout, spoke to me. He left me, but returned in a few minutes, and brought another specimen in his hat, saying he would catch me some more. “Well,” I said, “you can go at it, for there is a spare net.” We got about two dozen, and he proved the best man at catching, and I did the boxing. He afterwards sent me some on to Windermere, as late as July 20th; some fine, and some dead with the heat. I shall have a fair supply for my friends.—J. B. HODGKINSON; 6, Fishergate Hill, Preston, July 26, 1886.

CIRRHÆDIA XERAMPELINA, &C., NEAR WELCHPOOL.—On July 29th my brother took a specimen of *Geometra papilionaria* flying at dusk near here. It was in fair condition, with the exception of a cut in one of the front wings. I have also bred a splendid specimen of *C. xerampelina* from a caterpillar found under moss on an ash tree in the autumn. I found three caterpillars, but two died. As the Rev. J. Greene says that the larva forms a cocoon beneath the surface of the earth, this may be interesting. The insect emerged on August 2nd. I should be glad if any of your readers could tell me if either of these insects has been seen here before. Unfortunately entomologists are very scarce throughout the district.—STANLEY P. JONES; Westwood, Welchpool, August 5, 1886.

VARIETIES OF AMPHIDASYS BETULARIA.—In the Manchester district this species has gradually altered in colour from light to dark during the last forty years. In my early days the black variety was almost unknown. I think Mr. Edleston purchased the first I heard of. About that time I reared two from pupæ obtained by digging. Since then I have often got black and ordinary types from pupæ; also reared them from larvæ and ova. I have found both forms *in copulâ*. Sometimes an ordinary type with a black one, and black with intermediate. Recently I have seldom seen two ordinary types *in copulâ*, although it was the rule formerly. The female is more frequently black, and the dark forms predominate at present. I do not think food has any influence on variation of this species. I have found larvæ on

birch, alder, oak, elm, beech, apple, pear, willow, poplar, sycamore, &c., in gardens, parks, woods, moors, mosses, and on open plains in the following localities:—Bowdon, Knutsford, Delamere, Alderley, Disley, Chat Moss, and in the vicinity of Manchester generally. The black variety has been reared at Bolton and Middleton. In the latter town a number of buff varieties were, I believe, reared from ova obtained from a female which had been previously reared from ova in confinement. It has been suggested that they were acted upon chemically, but I do not think there is any truth in the assertion in that instance. And the most singular part is that they—at least those that I have seen—were light buff, instead of where black as in ordinary types; though I have not seen a specimen entirely buff, which would have been the case if a black one had been treated chemically.—JOSEPH CHAPPELL; 29, Welbeck Street, Chorlton-on-Medlock, Manchester, Sept. 1, 1886.

THE TEPHROSIA DISCUSSION.—I paid a visit to a friend yesterday, who drew my attention to a discussion in the 'Entomologist' on *Tephrosia crepuscularia* and *T. biundularia*. My friend has had a series sent him of what was said to be each species. I declared them to be one only, viz., *T. crepuscularia*; in fact we were both of the same opinion. I have often taken *T. biundularia* in Drinkwaters Wood, Agecroft, and in Botany Bay Wood, near Worsley, on and near larch trees. It is always a dark and distinct species. I have taken *T. crepuscularia* in Delamere Forest, Cheshire, and Burnt Wood, Staffordshire, in abundance on various kinds of trees, except larch, and sparingly on Rudd Heath; but no *T. biundularia*. I have also reared them from the pupa with the same result, but not from the ova, not thinking it worth my trouble. My friend has frequently captured *T. crepuscularia* in Mr. Philips' park at Pilkington, but no *T. biundularia* there. I have a good series of both species, but no intermediate forms. The above species have not varied from what they were forty years ago. My advice would be to rear them from the ova, which may be easily obtained.—JOSEPH CHAPPELL; August 24, 1886.

TIMANDRA AMATARIA DOUBLE-BROODED.—During the last three seasons I have taken specimens of *Timandra amataria* on the cliffs at Kingsdown, near Deal, in the middle of August.

These specimens have been, in every instance, less brightly marked and slightly smaller than the brood occurring generally some six weeks earlier. I have also taken late specimens in Chattenden Woods, and believe the insect regularly double-brooded, although from the lessened numbers I feel certain that, as the editorial note to Mr. Frohawk's query explains, only a portion of the larvæ feed up, pupate, and emerge in the autumn.—J. W. TUTT; Rayleigh Villa, Westcombe Park, Blackheath, S.E., September 9, 1886. [Snellen, in 'De Vlinders Nederland,' vol. i. p. 568, says, "June, August, two generations."—E. A. F.]

UNUSUAL FOOD FOR ABRAXAS GROSSULARIATA.—I have this year bred a considerable number of *A. grossulariata* by feeding the larvæ, which were found on the common *Euonymus*, on the flowering currant (*Ribes sanguineum*). As this plant seems in general to be so disliked by lepidopterous larva, I thought the above fact might be of interest to some of your readers.—ALFRED G. SCORER; Abercorn Lodge, Upper Hamilton Terrace.

FOOD OF LOBOPHORA VIRETATA.—In answer to a correspondent (Entom. 181) I may say that in Sutton Park this insect feeds on holly. There is no privet anywhere in the woods.—W. HARCOURT BATH; Sutton Coldfield, September, 1886.

BREEDING BOTYS TERREALIS.—From larvæ of the above, taken at Grange last September, I was successful this season in breeding a good majority for the first time. They previously always died through the winter. Last year I put the larvæ, when full-fed, into a large gauze cage, and cut small pieces of hollow reed, two inches long, and put them into the cage with pieces of crumpled paper; into these the larvæ went. I kept them exposed out of doors all winter, and have thus been successful in breeding nearly all of them. This may interest some breeders of *Pyrilidæ*.—H. MURRAY; 20, Queen Street, Morecambe, September, 1886.

SPILODES PALEALIS IN YORKSHIRE.—Among a number of *Lepidoptera* recently sent me to name by Mr. Joseph Sewell, of Whitby, I found this species, which Mr. Sewell informed me he took on the cliffs at Whitby, and also that several other specimens had been taken by Mr. Lister of that town. The species is quite new to the county list.—G. T. PORRITT; Huddersfield, August 6, 1886.

ÆNECTRA PILLERIANA, *Schiff.*, AND PTEROPHORUS PALUDUM, *Zell.*—Both these species have been met with here during the past summer by myself and my sons. The former is the pale greenish olive-brown form, with—for the most part—the markings nearly obsolete. The latter is an exceedingly delicate little insect, and under the most favourable conditions of weather appears, so far as our experience goes, only to fly for a very short time just before and just after sunset. Can any of the correspondents of the 'Entomologist' inform us what the larva feeds upon, and when it should be looked for?—O. P. CAMBRIDGE; Bloxworth Rectory, September 27, 1886.

GELECHIA OSSEELLA AT DEAL.—I am pleased to add *Gelechia osseella* to the list of the fauna of the Deal district. A single specimen was detected by Mr. Sang in some species of Lepidoptera which I was unable to determine, and which he named for me.—J. W. TUTT; Rayleigh Villa, Westcombe Park, Blackheath, S.E., September 9, 1886.

NOTES FROM HAMPSHIRE.—Accompanied by Mr. McRae, I spent a second week, commencing August 11th, in the New Forest, this year at Brockenhurst. We were disappointed in finding *Catocala sponsa* and *C. promissa* scarce again, as we only managed to obtain a few specimens of each. *Amphipyra pyramidea* and *Triphæna fimbria* and *T. ianthina* came very freely to sugar, as well as *Noctua baia*, these being about the only Noctuæ of any importance taken at sugar. We also secured some good varieties of *Cidaria truncata (russata)* at sugar, though most of them were taken on the wing, and were in really fine condition. *Ligdia adustata*, to our surprise, was still out. Of Rhopalocera a pair of *Thecla betulæ* and *Vanessa polychloros* fell to my net. On the 18th of August I returned to Christchurch, where I had my best success. The following is a list of captures in this neighbourhood from that date until now:—At light, *Pterostoma palpina*, *Lithosia griseola* and its var. *stramineola*, *Eugenia fuscantaria*, *Eugonia quercinaria (angularia)*, *E. crosaria*, *Luperina cespitis*, *Eremobia ochroleuca*, *Hydræcia micacea*. At sugar, *Calymnia diffinis* and *C. affinis*, *Noctua dahlîi*, *N. umbrosa*, *N. rubi*, *Cirroædia xerampelina*, *Xanthia flava (silago)*, *X. fulvago (cerago)*, *Xylina socia (petrificata)*, *Calocampa exoleta*. I might as well add that I took this morning a male specimen of *Colias edusa*, the first one taken

by me since the year 1878, when they were so plentiful.—J. M. ADYE; Somerford Grange, Christchurch, Sept. 20, 1886.

LEPIDOPTERA OF THE TAME VALLEY.—It may perhaps interest some of your readers to know that the number of species of Macro-Lepidoptera which have been recorded as having occurred in the Tame Valley (of which Birmingham is the centre) is 473, which is considerably more than half of the number of species occurring in the British Isles. The above number is made up as follows:—Rhopalocera, 54; Heterocera (Sphinges, 24; Bombyces, 77; Noctuæ, 178; Geometræ, 140), 419. There is no doubt that the district contains considerably more than that, but at present it has been but imperfectly worked.—W. HARCOURT BATH; Sutton Coldfield, September, 1886.

EATING CICADAS. — “Mr. Howard remarked (Proc. Ent. Soc. of Washington, vol. i., p. 29, June, 1885) upon his experience regarding the edibility of the Periodical Cicada. He had continued the experiment begun by Dr. Riley, the latter having been called away from town. With the aid of the Doctor's cook he had prepared a plain stew, a thick milk stew, and a broil. The Cicadas were collected just as they emerged from the pupæ, and were thrown into cold water, in which they remained over night. They were cooked the next morning, and served at breakfast-time. They imparted a distinct and not unpleasant flavour to the stews, but were not at all palatable themselves, as they were reduced to nothing but bits of flabby skin. The broil lacked substance. The most palatable method of cooking is to fry in batter, when they remind one of shrimps. They will never prove a delicacy.”

RAPID HATCHING OF LEPIDOPTEROUS OVA.—In the evening of Saturday, the 6th of August, a worn female specimen of *Acidalia aversata* deposited some two dozen ova in a pill-box. On seeing Mr. G. H. Raynor's remarks on this subject (Entom. p. 209), I determined to note carefully how long these eggs would be in hatching. About four p.m., on Thursday the 11th August, upon looking into the pill-box in which they had been laid, I was exceedingly surprised to find that all the ova had produced young larvæ, thus being only five days from depositing to hatching. I may say that here the weather has been unusually cold for August.—A. E. HALL; Norbury, Pitsmoor, Sheffield.

SUNFLOWERS.—I would recommend every entomologist to grow sunflowers, on account of the number of insects which they attract. Diptera come to them in immense numbers. They are also good baits for butterflies, particularly Vanessidæ; on the other hand, I have never seen any of the Pieridæ near them. Bees are very fond of sunflowers, on account of the abundance of honey which they contain. I have observed numbers of bees to remain on these flowers for several hours together sipping the sweets, and in the end to become so intoxicated that they were unable to fly away. Many of the greedy insects get so covered with the pollen that they look like a mass of yellow. Sunflowers would make a good substitute for "sugaring" in gardens where there are no trees. The Noctuæ come to them in great numbers at dusk.—W. HARCOURT BATH; Sutton Coldfield, Sept., 1886.

PLAGUE OF LARVÆ.—During the latter part of last year the large vineyard belonging to Don Federico Puga Borne, of Chillan, Chili, was attacked by so many larvæ of a species of *Arctiidæ* that the whole of the plants were entirely stripped of their leaves in a few days. Señor Puga Borne offered the price of 20 cents a gallon for the larvæ to some boys, who immediately went to work, and in five days they collected no less than sixty bags full, equal to about forty-five bushels English measure. Two dozen of the larvæ were sent to Santiago to the National Museum, and imagines have just emerged,—a species of *Laora*, Walker, and evidently new to Science, as it does not correspond to any of the four descriptions of Butler in the Trans. Ent. Soc. London, for the year 1882, and which are the only known species of this genus from Chili. The larvæ of the genus *Laora* appear to have a peculiarity of their own, and I have never observed it in the larva of any other genus. The peculiarity is, that the species appear to undergo the greater part of its metamorphosis in the larval state; for when full-fed they climb up the sides of the breeding cage, and there remain without moving and without food for three, and even four months, at the end of which time they begin to spin their cocoon, and in a few days the imagines begin to appear, so that when full-fed they either appear to need ripening or are preparing the silk for their cocoons; but then why so long—from three to four months—in the larval state after once fed? When in the pupal state they rarely, if ever, pass

twenty days.—WILLIAM BARTLETT CALVERT; Colegio Ingles, Nataniel, 13, Santiago, Chili, April 30, 1886.

NOTES ON GALL COLLECTING.—From the galls collected last winter I have reared nine specimens of the pretty *Catoptria juliana*. For the last ten years I have devoted considerable time to gall-collecting during the winter months, the principal object being the acquisition of *Ephippiphora obscurana*, an insect not often met with in the perfect state. The greatest quantity of galls were collected during the winter of 1878—9, from which only one one *E. obscurana* was reared, the average of seven years being six. A good series of *Heusimene fimbriana*, *Carpocapsa splendidulana* and *Coccyx argyrana* were bred regularly for the first six years, with occasional specimens of *Scardia granella*, *Gelechia scalella* (*aleella*), *Teleia luculella*, *Æcophora lunarella*, &c. *H. fimbriana* then ceased to appear for four years, but has put in an appearance again this year, seven having been taken from my cages. Last year there was a decided improvement in the number of *E. obscurana* reared, and this season the number is still greater, which may perhaps be attributed to the fine weather prevailing at the time of its emergence last year.—WILLIAM MACHIN; 29, Carlton Road, Carlton Square, E., Sept. 6, 1886.

TRESPASSING.—May I ask for a little space in the 'Entomologist' to treat of a matter which may concern, at some time or other, all collectors? A (we will say) is a collector who has discovered good ground, and makes no secret of it. This ground is "strictly preserved," and A has with much difficulty obtained leave of access to it, the difficulty being enhanced by the preserver thinking—rightly or wrongly—that where one collector enters, others are sure to follow. B is another collector who is, naturally, anxious to explore this good ground. He attempts to do so and is challenged by the keepers. He tells him that A gave him leave to go on the ground, and is, of course, laughed to scorn. A, it need scarcely be said, had no power, nor made any assumption of having the power, to give leave, and the consequence of B's statement to the keepers is that A's relations with the proprietor are not the more friendly. To put another case: A has, in preserved ground, discovered a rare insect, and does not conceal the locality. B visits the locality but fails to get the insect, so asks the keeper in charge to try and get specimens for him,

saying that A (who did nothing of the sort) told him to apply to the keeper. The master of the keeper may hear of this and be naturally displeased with A (with whom he is on friendly terms) for attempting (as he supposes) to employ his servants. The master of course knows nothing of B. Now though one entomologist is, or should be, ready to help another to the best of his power, such help cannot be expected to extend to the unsanctioned use of his name. It has been my misfortune to have had my name used—more than once—in ways similar to those I have sketched above, and I wish to know how I am to protect myself in the future. I hope that I am as ready as any other entomologist to help my brethren, but such help cannot be taken as including the unauthorised use of my name as an “Open, Sesame!” to forbidden ground—an attempt which I fear will do no good to the user and cause some unpleasantness for me. I should not have troubled you with this note if it had been a matter which only concerned myself, but what occurred to me has doubtless happened to others, and therefore concerns the fraternity at large.

F. BUCHANAN WHITE; Perth.

AN AMERICAN BUTTERFLY. — We learn from the ‘Entomologist,’ that our American butterfly, *Danaï archippus*, after taking possession within a few years of the Sandwich Islands and Australia, and while making rapid conquest of the Malayan Archipelago, has as well invaded England, and has been taken so often that he seems likely to conquer and stay. It is rather difficult for the great majority of Lepidopterists to recognise him under the name of *Anosia plexippus*, but that is the name that the British Museum gives to what the rest of the lepidopterological world calls *Danaï archippus*. We suppose, after the English fashion (if it be not done already), he will soon be dubbed with a “common name” as well, and his identity still further disguised. But none the less he is an acquisition to the English fauna, new, larger than any of the rest of their butterflies, brilliant in colour, showy in appearance, easily caught, easily reared, novel and beautiful in chrysalis and larva, and withal American.—G. D. HULST; ‘Entomologica Americana,’ ii. 104, August, 1886.

Errata.—Page 232, first line should be first line of p. 233. Page 256, line 3 from bottom, for *flava* read *flavago*; line 4, for *Cirrædia* read *Cirrhædia*; line 7, for *Eugenia* read *Eugonia*.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—September 1st, 1886. Robert M'Lachlan, Esq., F.R.S., President, in the chair. The following gentlemen were elected Fellows:—The Rev. Professor Dickson, D.D., of Glasgow University; Mr. P. Cowell, of Liverpool; Mr. A. O. Walker, of Colwyn Bay, North Wales; and Mr. Lyddon Surrage, of Hertford College, Oxford. The President remarked with regard to the gnats from the Kent Water-works, exhibited at the last meeting, that Professor Westwood had since informed Mr. Douglas that they were only the ordinary *Culex pipiens*. Mr. Slater exhibited certain parasites found on the body of a larva of *Smerinthus tilia*, which Mr. Waterhouse believed to be *Uropoda vegetans*, a species of *Acari*. Mr. W. Warren exhibited the following Lepidoptera, viz.:—*Eupithecia fraxinata*, caught in Regent's Park; *E. innotata* (Hüb.), bred from *Artemisia maritima*; a variety of *Eupithecia satyrata*; a *Gelechia*, caught in Wicken Fen twenty years ago by Mr. Bond, and believed to be a new species; *G. fumatella* (Dgl.) or *celerella* (Stn.) from Hayling Island; *G. vilella* (Zell.), bred from larvæ collected on the Essex coast on mallow; *Lithocolletis scabiosella* (Dgl.), bred from larvæ found near Croydon; and *Catoptria parvulana* (Wlk.), bred by Mr. Vine, of Brighton, from *Serratula tinctoria*. He also exhibited larvæ of *Gelechia vilella*. Mr. South exhibited specimens of *Dicrorampha distinctana* (Hein.), and stated that he considered it to be merely a variety or local form of *D. consortana*, from which, in the larval stage, it could not be separated. Mr. Stevens exhibited a living specimen of *Clerus formicarius*, recently found under the bark of an ash tree in Arundel Park, Sussex. Mr. Billups exhibited *Chrysis succincta* (Linn.), taken by sweeping at Chobham, on the 28th July last. He stated that this very rare species was recorded by Shuckard as having been taken in a sandy lane near Brockenhurst, in the New Forest, and at Blackwater, on the borders of Berks and Hants; and he further stated that the late Mr. Frederick Smith had also taken two specimens of this species in Hampshire. Mr. Billups also exhibited *Microphysa elegantula* (Baer.), taken at Broadstairs, Kent, on the 23rd August last. The Rev. W. W. Fowler exhibited, on behalf of Mr. Theodore Wood, a larva of *Langelandia anopthalma* (Aubé), a

species new to Britain. Mr. H. Goss exhibited specimens of *Oxygastra curtisi* (Dale), recently taken near Christchurch, Hants. He stated that he had met with the species in the same locality in 1878, but had never seen it anywhere else in the United Kingdom, nor was he aware of any recent record of its capture. Mr. M'Lachlan observed that the species was taken many years ago in Dorsetshire by the late Mr. Dale, but that he knew of no recent captures, except those recorded by Mr. Goss. He also made some remarks as to the distribution of the species on the continent of Europe. Mr. M'Lachlan exhibited a specimen of *Dilar meridionalis* (Hagen), taken by him in July last in the Pyrénées Orientales; also about 150 examples of the genus *Chrysopa* from the same district, where these insects abounded. Amongst them were *C. vulgaris* (Schneider), *perla* (L.), *walkeri* (Brauer), *viridana* (Schneider), *tenella* (Schneider), *prasina* (Burm.) and varieties, *flava* (Scop.), *septempunctata* (Wesm.), *flavifrons* (Brauer), and others not yet fully identified. Mr. M'Lachlan stated that he had obtained about 1500 specimens of Neuroptera in all families during his recent visit to the Pyrenees, which were being prepared for study. He also exhibited a few Coleoptera from the same district, and remarked on the extraordinary abundance of the pretty Lamellicorn, *Hoplia cærulea*, which was so common as to give the meadows the appearance of being studded with multitudes of brilliant blue flowers. Mr. C. O. Waterhouse called attention to the numerous reports, which had lately appeared in the newspapers, of the supposed occurrence of the Hessian fly (*Cecidomyia destructor*) in Britain, and inquired whether any communication on the subject had reached the Society. The Rev. W. W. Fowler stated, in reply, that he had been in communication with Miss Ormerod on the subject, and that she had informed him that neither the imago nor larva of the species had been seen, and that the identity of the species rested on the supposed discovery of the pupa. Mr. A. H. Swinton communicated a paper, entitled "The dances of the Golden Swift." In this paper the author expressed an opinion that the peculiar oscillating flight of the male of this and allied species had the effect of distributing certain odours for the purpose of attracting the females. Mr. Jenner Weir made some remarks on the subject.—H. Goss, *Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—Sept. 2nd, 1886. R. Adkin, Esq., F.E.S., President, in the chair. Mr. J. H. Carpenter exhibited dark forms of *Smerinthus populi*. Mr. Wellman, a box of Exotic Lepidoptera, all taken on board ship while at sea; one, a species of *Sphinx*, having been captured about 1000 miles from land; also a large number of varieties of *Bryophila perla*, and living larvæ of *Cidaria picata* and *Acidalia rusticata*. Mr. Sheldon, gray and red forms of *Noctua castanea*, bred from larvæ taken on Shirley Heath, Surrey. Mr. South, nine varieties of *Lycæna corydon* from Eastbourne; the exhibitor said that he had taken a number of specimens which formed the connecting links between those now exhibited; one group had but few spots on the under side, in another the spots were absent, and in the remaining group the spots were confluent. This gentleman also exhibited varieties of *Abraxas grossulariata*, and specimens of *Dicrorampha consortana*, S., var. *distinctana*, Hein. With reference to this last-mentioned insect, Mr. South said that he first took a couple of specimens in 1881 at North Devon, one of which was sent to Mr. C. G. Barrett, who identified it as *Dicrorampha distinctana* of Heinemann. This year he had bred fourteen specimens from a batch of *Chrysanthemum* received from North Devon, and the larva was identical with the description of a larva of *consortana*, taken by him at Shanklin, Isle of Wight. Mr. J. J. Weir exhibited seven specimens of *Argynnis paphia* and one of *A. euphrosyne*, and drew attention to a number of white spots on the wings, which he stated were not suffused spots, as in *ianira*, but were always well defined, and in nearly all cases symmetrical. A discussion then took place as to the origin of these spots, in which Messrs. South, Carrington, Adkin, Sheldon, and others took part. Mr. Adkin exhibited light and dark forms of *Cleoceris riminalis*. Mr. Cooper, *Zonosoma orbicularia*, *Eupithecia subfulvata*, and *Tephrosia biundularia*, bred from a female captured June last, the larvæ having fed upon knot-grass. Mr. T. R. Billups, a rare hymenopteron, *Tachytes unicolor*, taken at Hayling Island, June 7th; the following species of Coleoptera,—the very scarce *Choragus sheppardi* from Broadstairs, *Molorehus minimus* and *Mycetoporus longulus* from Bookham, and the scarce *Panageus quadripustulatus*; also two local species of Hemiptera,—*Phylus*

coryli and *P. avellanæ* from Westerham; and the curious-looking homopteron, *Ledra aurita*, from Broadstairs.

September 16th, 1886. R. Adkin, Esq., F.E.S., President, in the chair. Mr. Cooper exhibited a brilliant series of *Triphæna fimbria*, bred from North Devon pupæ; and a long series of *Zygæna filipendulæ*, showing marked variations of the border of the posterior wings. Mr. Adkin exhibited *Lophopteryx cuculla*. Mr. E. Joy, a remarkable variety of *Epinephele ianira*. Mr. Wellman showed a series of *Acidalia bisetata* from Raindean Wood, Folkestone; a long and varied series of *Bryophila muralis* from southern localities; also *B. par* for comparison; likewise *Dianthæcia irregularis*. Mr. W. G. Sheldon brought *Triphosa dubitata* and *Agrotis agathina* from Shirley Heath; some discussion ensued upon rearing the larvæ of the latter species. Mr. J. Jenner Weir brought a specimen of an *Agrotis* taken some forty years since, which has not yet been identified; also a specimen showing the characters of *Agrotis segetum* and *Agrotis suffusa*. Mr. West (Greenwich) exhibited a long and variable series of *Cryptocephalus pusillus* from West Wickham. During the evening donations were made to the Library, Collection and Herbarium. It was announced that, as the Society's rooms had proved quite inadequate on the last occasion, the usual Annual Exhibition of Specimens of Natural History generally would take place at the "Bridge House Hotel" Assembly Rooms, on Thursday, the 25th of November next.—H. W. BARKER, W. A. PEARCE, *Hon. Secs.*

OBITUARY.

HENRY WILLITTS. — Many of our readers will be sorry to learn that Henry Willitts died during the past month, at his residence in Sheffield. During the season of 1885 he collected in the West of Ireland, but a full list of his captures does not seem to have been published. Mr. Willitts will be much missed by the Sheffield entomologists, who are sadly few and far between, as he was one of the best-informed among them, and always willing to assist those to whom he could impart local or general information.

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ARE *CEROSTOMA RADIATELLA* AND *C. COSTELLA* DISTINCT?

BY RICHARD SOUTH, F.E.S.

MR. T. J. HENDERSON, of Glasgow, when sending some insects from Scotland lately, included a series of *Cerostoma radiatella* and *C. costella*, concerning which he writes:—"I have a strong impression these are but one species; they appear always to occur together, and intermediate varieties are common enough." Looking at the specimens sent, I am quite inclined to agree with Mr. Henderson, and should be exceedingly puzzled to say whether some of the examples are referable to *radiatella* or *costella*.

My series of each of these insects, from various localities in the South of England, would at first sight appear to consist of two clearly distinct species. Both are more or less variable as regards colour of fore wing; but the broad patch of white or pale ochreous extending along the costa from the base to, or nearly to, the middle, is the distinguishing mark of *costella*. On a careful and critical examination of a very variable series, labelled *radiatella*, I detected a specimen with a faint indication of this costal patch; but this specimen in all other respects differed not at all from other examples of the same form of *radiatella*. I then proceeded to examine the blackish dots, sometimes conspicuous in pale-coloured *radiatella*, with especial regard to the spot situated just above the inner and towards the hind margin. This latter I found to be identical in both insects, not only in size and position, but in being followed by a pale sheen, or, in some

examples of each, whitish patch. Some examples of *radiatella* have a dark streak running through the wing from base to apex; this streak is always more or less distinct as far as the middle of the wing in *costella*, and forms a border to the costal patch. In one example the streak is to be traced right through to the apex. Another feature common to both insects, but perhaps most constant in *costella*, is a short blackish dash from the base to the inner margin. Of dark *radiatella* the head and thorax are of the same colour, but specimens ornamented with white have the head or thorax, sometimes both, also white, or marbled with white. The head and thorax of *costella* are invariably white or pale ochreous. There is no appreciable difference in the hind wings of the two insects. As far as I know the larva of each feeds in May and June on oak.

As many Micro-lepidopterists have probably bred these insects, it would be interesting to have their experience. Possibly the larva of one of these insects may possess some trustworthy character which will serve to separate it from the other more readily than seems possible in the perfect state. Of course in a rough-and-ready way the insects are easy enough to separate, but such a division seems hardly satisfactory. What we want to know is this,—Are *Cerostoma radiatella* and *C. costella*, as they now stand, really two good and distinct species? If the insects are specifically distinct, do forms of the one so closely resemble forms of the other that the species to which each should be referred is difficult to determine?

12, Abbey Gardens, St. John's Wood, N.W.

THE LIFE-HISTORY OF *TEPHROSIA CREPUSCULARIA* (OR *BIUNDULARIA*).

BY THE REV. G. A. SMALLWOOD.

As the wish has been repeatedly expressed that the egg and larva of this insect should be accurately described, and as I have bred it for some years, I will now supplement my former papers (Entom. 161, 181) by giving some notes on the life-history of the species, which, although styled *biundularia* by myself and others (for the sake of clearness merely) in the recent discussion, is the

same species which Mr. Barrett (in an interesting article in the Ent. Mo. Mag. of September last) tells us ought to be called *crepuscularia*. Be the name what it may, I only wish it to be understood that the insect I am about to describe is not a mixture of two, but a well-defined species.

The egg.—In confinement the ova are deposited in small clusters, rarely singly, and are generally covered lightly with scales from the body of the moth. Their shape is elongated oval. They appear to have no indentations or marks, and are of a beautiful pea-green colour.

Larva.—The young caterpillar emerges on the fourteenth or fifteenth day from the egg, which had changed in colour from green to nearly black, and begins to move about very actively. At first sight the little caterpillar is black and white, the latter colour forming several incomplete rings round the body, and a row of conspicuous spots along the lateral area. In three weeks the larvæ begin to show the many variations into which they run. They are grey of various shades, some tinged with orange, some with brown, some with rusty, while others are suffused with mahogany-red. The dorsal area is palest on the anterior and two posterior segments. There is a series of undefined pale blotches on the lateral area, terminating in a decidedly conspicuous pale mark on each side of the anterior clasper. These pale blotches display the ochreous yellow or rosy tint, which varies in different individuals. There is no evident medio-dorsal line, but the dark subdorsal line is seen on segments 4 to 9, ending abruptly on segment 4 in a pair of jet-black spots, which, with a trace of the medio-dorsal line between them, form a transverse series of black spots on the 4th segment. A well-marked velvety dash is placed obliquely on each side of segment 6, forming an arrow-head. The larva is stout and cylindrical, except that the first three segments are drawn together in rest, whilst the 4th segment is decidedly swollen laterally, giving the larva a club-shaped appearance, something like that of *Eurymene dolabraria*. The ventral area is darker than the dorsal, nearly black in some specimens. It is a larva that varies greatly in colour and shade, but it has at any rate five constant characters, *viz.*:—(1) The arrow-head on segment 6, (2) the pale lateral blotches, (3) the conspicuous pale mark on the side of the anterior claspers, (4) the swollen 4th segment, and (5) the three transverse black spots on segment 4.

The larva generally holds itself erect at an angle with the food-stalk, with the first four segments thrown forward. It feeds to my knowledge on oak, elm, plum, and rose. I have never seen it on larch; but it feeds probably on many other trees, and takes eight or nine weeks to come to maturity.

The pupa.—The larva simply buries in the ground and spins no cocoon, and changes to a pupa of the common chestnut-colour, rather pale, especially on the wing-cases.

The imago.—It would be impossible, if it were not needless, to describe the varieties and shades of difference in this stage. Hardly two are alike, and if there is a second species it certainly cannot be distinguished in the imago. I will, however, notice a few leading types. 1. Ground colour bone-white, finely dusted with grey, the transverse lines being visible only on the wing-rays as black points. 2. The same, but well marked with strong, black, transverse lines. 3. Grey-brown, much dusted with darker, and slightly tinged with ochreous. 4. Sooty black, a few grey scales on the sides of the thorax, and a white line beyond the invisible subterminal line. 5. Ochreous grey, a band of warm brown or ferruginous colour following the black transverse lines. (I believe this is the original *binudularia*, so named from the two conspicuous bars or waves formed by the transverse line and its accompanying band or wave of warm colour). 6. Specimens from Perth are larger and better marked than any of the preceding, the ferruginous band becoming umber-brown.

The moths generally emerge in May; but I have seen it a month earlier, and received it alive this year (a backward year) from Mr. Harrison, of Barnsley, on June 25th. In the South of England a remarkable form or "subspecies" of this moth appears on the wing in March, and produces a second brood at the end of July. The question, Is this a distinct species? will only be solved finally when we know more of the egg and larva of this double-brooded insect. It may prove to be a distinct species; but if so, it will not be to the credit of south-country entomologists if the doubt is allowed to remain much longer. If, on the other hand, it be *not* a distinct species, we have to observe these two remarkable facts, *viz.*, that in the South of England the first brood continues to fly from the beginning of March till the end of May (a most unusual duration), and also that a double-brooded variety of the species exists side by side with the single-

brooded type, and constantly retains its own economy. In view of these difficulties, and believing, as I do, from the remarkable fineness of Scotch specimens, that this is originally a northern insect, the idea constantly recurs to me, Have we here discovered, in this double-brooded insect, an instance of how a *variety* originates in the altered conditions of a southern climate, and developes its own characteristics and habits, until it becomes a separate species? If so, this insect appears to be now in the act of transition, having its own constant characters, which still have not yet developed into any conspicuous or specific differences.

I had two or three ova of this insect five years ago, laid in July, and reared two moths, which came out at the end of February. Speaking from memory, I can only say that those larvæ *strongly resembled* the species described above, though paler, perhaps, more obese, and less distinctly marked. The resemblance in fact was so strong in the larva, as it is in the imago, that I am convinced that any definite difference (as I said before) will be found, if at all, in the ova.

At any rate, I hope south-country entomologists will keep this subject in view in March and July next, and make an effort to obtain a more accurate knowledge of the egg and larva of this double-brooded insect, which is found, I believe, only in the South of England.

Willington, Burton-on-Trent, October, 1886.

TEPHROSIA CREPUSCULARIA AND T. BIUNDULARIA.

BY RICHARD SOUTH, F.E.S.

SEVERAL entomologists have taken part in the exceedingly interesting discussion, recently conducted in these pages, concerning the identity of *Tephrosia crepuscularia* and *T. biundularia*. As the facts adduced for and against are probably fresh in the minds of my readers, recapitulation is unnecessary.

Probably there is nothing in the arguments brought forward by Mr. Tutt, or those who think with him, to shake the opinion of others who consider the insects identical. At the same time the views of the Rev. G. A. Smallwood, and other entomologists who agree with him, will hardly be accepted by those who consider slight

differences of colour, in conjunction with an intermediate date of emergence, as important determining factors in the separation of these insects. This entomological dead-lock, as it were, arises from the very opposite ideas each side engaged in the controversy entertain as to what constitutes a species.

Now there is perhaps no more unsatisfactory term employed in biological classification than your "species." Many able naturalists have defined the term, and all such definitions embrace two fundamental principles,—resemblance of certain characters between individuals, and a knowledge that such individuals have descended from a single pair, or from pairs identical in every respect. If it were permissible to establish species bred in a semi-domesticated state on these principles alone, we should soon augment the number of British Lepidoptera to a considerable extent. Judging by the limited experience I have had in this direction, I am inclined to think that it would be quite possible to construct three or four "species" out of any insect given to variation.

Returning to the subject more immediately under consideration, I have before me at this moment a compound series of the two so-called species. The individuals comprising the series are from various localities in Great Britain,—such as Brentwood, in Essex; Marten Drove, Wiltshire; Lynton, North Devon; Barnsley, Yorkshire; and Perthshire, Scotland. The palest specimen in the whole series is one in the Wiltshire detachment, taken end of March, and the darkest normal examples are the Perthshire contingent; whilst those in the Barnsley division are variable, both as regards ground colour and intensity of marking. Curiously enough two specimens, which show a tendency to assume the suffused blackish grey form, said by Mr. Tutt to be peculiar to the May and June insects (Entom. 98), are almost identical with an example in the Wiltshire group, captured at the end of March. The North Devon specimens differ from all the others in ground colour, which is a *lustrous* pale grey. These were taken on trunks of larch, together with *T. consonaria*, in May. The only specimen in the entire series with which the North Devon insects agree in character of marking is one in the Wiltshire section, but it differs therefrom in ground colour, as it has a brownish tinge. I contend, however, that it would be stretching

a point somewhat unduly to argue that this Wiltshire example is distinct from the North Devon specimens because it has a slightly different colour, and was taken a few weeks earlier. But suppose we admit that it is distinct, then what are we to say about certain other examples in the Wiltshire group, which are as like Essex June specimens as this insect from widely distant localities can be? The question of earlier or later emergence apart,—if the Wiltshire insects are *crepuscularia*, so also are those from Essex; or if the specimens from Essex are *biundularia*, then so also are those from Wiltshire. This is tantamount to saying that the insects from both localities are of the same species, and as such I certainly regard them.

The fact of an insect appearing in the perfect state at three distinct periods of the year is exceptional only in one respect,—that is, the first and third flights of *crepuscularia* would appear to be quite independent of the second or middle brood. I am of opinion that the first of these broods cannot be other than an earlier emergence, influenced by climate in the first instance and perpetuated by inheritance; the third brood, which by the way is only partial, is a natural sequel to precocious emergence; the imagines of the intermediate brood are the stock from which the earlier form has been developed. These last still retain, as regards the time of emergence, the original habits of the species. Considered in this light, the occurrence of double- and single-brooded forms of a species in one and the same locality is not so incomprehensible as at first it would seem to be, especially if we at the same time have regard to the probable origin of this species.

All the European species of the genus *Tephrosia* in the larval state are partial to birch, alder, and fir; this is more especially so with *crepuscularia* and *punctulata*. As we now find these two species have attained a higher latitude than their congeners, we may suppose that they were the forms best fitted to push forwards at the time when, after the ice age, animals and plants were returning northwards from Central and South Europe. *Crepuscularia*, as it followed the receding cold, would seize on every favourable locality and establish itself therein. In course of time, as the climate became warmer, first a portion, then the whole, of the imagines would be induced to emerge at an earlier period of the year, and the larvæ would take to other food than that afforded by the Betulaceæ and Coniferæ. Then the early

emergence would give rise to a partial second brood, and finally the insect would become regularly and completely double-brooded, as is now the case in the warmer parts of Central Europe. In Great Britain the species is single-brooded, except in the South of England, where, as I have previously adverted to, it still retains its original habit as a single-brooded insect in part, though it is at the same time gradually merging into a double-brooded state. By the time this change is completely effected the single-brooded element will probably have ceased to exist in this species in the South of England. The British entomologist of the future, who may consider the double-brooded insect of the south distinct from its single-brooded brother of the north, will perhaps have nothing more trustworthy than colour and ornamentation to guide him in forming his separate series of each, unless he should consider all northern specimens *biundularia*, and all southern examples *crepuscularia*, without regard to such unstable characters as marking and coloration.

12, Abbey Gardens, St. John's Wood, N.W.

BOMBYX QUERCUS, CALLUNÆ, OR ROBORIS?

BY MISS K. M. HINCHLIFF

WILL someone disentangle the synonymy of *Bombyx quercus*, and describe its varieties? I have two varieties (or species) of this insect, one taken in England, the other in France, and am totally at a loss to name them, for every author and list-compiler seems to have different and conflicting views on the subject.

Newman describes and figures one species, *quercus* (the one I have taken in this country), simply mentioning *callunæ* as being longer in pupa. Kirby, on the contrary, calls Newman's *quercus*, *callunæ*, and describes as *quercus* the one I have taken abroad, which is decidedly redder in colouring, and has the band on the hind wings less curved; he makes no mention of *roboris*. Staudinger's Catalogue of 1861 gives one species, *quercus*, with ab. *roboris* and v. *callunæ*, his later one changing to v. *roboris* and ab. *callunæ*. Doubleday, in the 2nd edition of his Catalogue, published in 1866, makes *roboris* a variety of *quercus*, but *callunæ*

a separate species; in his Supplement of 1873 *callunæ* is a synonym of *quercus*, and *roboris* a separate species with *quercus* as synonym. South, in his recent List, gives only one species *quercus*, with *callunæ* and *roboris* as varieties. Thus it will be seen that every author has a different opinion.

If the following questions could be answered I should be much obliged:—1st. Is the species figured by Newman the one usually taken in this country? 2nd. Is it *quercus*, *callunæ*, or *roboris*? 3rd. If it is *quercus*, what are the distinctions between it, *callunæ*, and *roboris*? and are the two latter natives of Britain?

It seems to me that a new work on British moths, more in harmony with our lists, and describing all varieties, is much needed. Lang's 'European Butterflies' might well be taken as a model.

Worlington House, Instow, N. Devon, October 18, 1886.

[Various more or less important differences occur in specimens of *Bombyx quercus* occurring in various parts of Europe, and specimens so varying have been named, figured, or described by entomologists in the past. As regards *callunæ*, Palmer, and *roboris*, Schrank, the two varieties found in Great Britain, authors do not seem quite in accord. I apprehend that *quercus*, L. S. N. x. 498, is the type-form most generally distributed in Europe, including England; *callunæ*, the form which occurs in moorland and mountainous districts, and differs from the type principally in the darker colour of the female; and *roboris*, a variety of the male which has the fulvous bars of the fore wings wider than usual, and broad fulvous margins to the hind wings. The opinions of others would be exceedingly interesting.—R. S.]

SPURIOUS VARIETIES OF LEPIDOPTERA.

BY JOHN T. CARRINGTON, F.L.S.

DURING the past month I have received, as Editor of this magazine, several complaints from correspondents, to the effect that some person or persons had attempted, and indeed, in one or two instances succeeded, in palming off as varieties of British *Diurni*, ordinary specimens which had been either painted,

stained, or in some other manner coloured to represent unusual forms. So cleverly were they manipulated, that more than one of our oldest and most experienced entomologists have been imposed upon, not only by the excellence of the fabrication, but likewise by that childlike innocence (so ably depicted in the 'Heathen Chinees') with which these negotiations were conducted by the fabricator or his agent. Of course these people had "no idea" that there was anything specially peculiar in the varieties which they had "bred"—but that, as they appeared somewhat unusual, they were willing to allow their correspondents to have them for trifling sums of two shillings each variety and upwards.

As a warning to variety hunters, the following communications, selected from others received by me, are set forth.

Extract from a letter to Mr. Marsden, of Gloucester, from the vendor:—

"I am obliged to you for your letter of the 9th, and would have replied before, but was away from home. I now send you all (six) the blue-tipped varieties I have, with the exception of two in my private collection. I have not disposed of any, neither have I tried to. I only obtained ten really good ones, and will take sixteen shillings for the eight I have sent you, which I think you will consider a reasonable price."

The following communication I have received from Mr. Herbert W. Marsden, of Gloucester, above referred to:—

"Early last month I received by post, from a total stranger, two specimens of *Vanessa urticae*, the apical spot being blue instead of the customary white. Sender asked 3s. each for them, and apparently took me to be an amateur collector; and added that he had bred a few similar specimens from a very large number of pupæ. Believing them to be genuine I replied that, although of no use to me personally, if he would send me all there were I would dispose of them for him. A few days later I received a letter from a well-known and highly-respected country collector and dealer, from which I learnt that he also had received two similar specimens from same source. Some days later six more were sent me; and in the accompanying letter the owner says he had only obtained ten really good ones,—eight sent me and two in his own collection; thus not accounting for the two sent my friend. He also adds,—'I have not disposed of any, neither have I tried to.' As shown above, this is a deliberate falsehood, and this aroused my suspicions that the whole affair was an attempt at fraud. In the meantime I had sent one of the original specimens to Mr. Frederick Boud, which I have since received back. He

seems to think this specimen may be genuine. I have also had some correspondence with Mr. Philip Crowley and other well-known gentlemen, and, from the tenor of their letters and other facts named by them, I think it is my plain duty to make the above facts public, and shall be very glad if it can be shown that my suspicions are unfounded; but if the sender of these specimens to me is in any way wronged by above paragraphs, why, it is his own fault for making the mis-statements pointed out above. The eight specimens above referred to have been sent to the Editor of the 'Entomologist.'—H. W. MARSDEN; 37, Midland Road, Gloucester, October 22, 1886."

The following is from Mr. Philip Crowley, Waddon House, Croydon:—

"Some few weeks since I saw a very pretty specimen of *Vanessa atalanta* for sale at Messrs. Stevens' Auction Rooms, with the usual white spots on the fore wing of a beautiful pale pink colour. Since then I have had sent me by post, for approval, a very pretty variety of *V. cardui*, which was said to have been taken last year at Addington. This also had the usual white spots on the fore wings of exactly the same pink as the before-mentioned *atalanta*. I examined it, and returned it, with my opinion very plainly expressed. Last week I had a specimen of *V. urticæ* sent me, asking if I considered it genuine. In this specimen the usual white spot on the wing was of the same blue colour as the other blue spots. This I examined under an inch power, and plainly saw very minute specks of blue pigment, not only on the white, but also scattered over the black scales round the spot. It being evident that some fellow is doing his best to deceive collectors with varieties, let me caution them to be very shy of any which have a few spots of an unusual colour. I may add that since I saw the before-mentioned specimens I have tried a few experiments, and find it a very easy thing to colour the white spots in butterflies either pink, blue, or green, or any other colour, so well that detection is almost impossible. I would add that the person who tried to do me addressed his letter from about two miles from my address.—PHILIP CROWLEY; Waddon House, Croydon, October 9, 1886."

Mr. J. Jenner Weir writes to me on the 10th inst. :—

"I fear the ruse has succeeded in several instances. I was shown a *Vanessa urticæ* last Thursday which has certainly been coloured; and the letter was from the same man, who has also, I find, sent letters to others with specimens, including myself."

I hope that this attempt to improve upon Nature was rather intended to be a practical joke than a deliberate fraud; in which case the fabricator will doubtless return the money received for

such "improved" insects as he may have sold, and be satisfied with the kudos earned by his artistic efforts.

The specimens referred to by Mr. Marsden as having been sent to me are quite safely in my possession, and will be at the service of the sender to Mr. Marsden, after I have exhibited them at the next meeting of the South London Entomological Society, if he will make an appointment to see me, either immediately after that meeting or otherwise.

As most entomologists know, there is little difficulty in making varieties, and certainly no credit, when such are imposed upon the unwary as the real thing. I have seen many such *made* varieties during my entomological experience, probably one of the most extraordinary being a *Colias edusa* which appeared with the monogram of its captor cleverly indicated in deep crimson colour upon each of the anterior wings. I need hardly say that this was not intended as an imposition, but was the result of certain experiments to find out whether several suspicious-looking specimens of *C. edusa*, which were offered for sale, had been manufactured.

In the particular varieties of Vanessidæ now under discussion, the white markings of the wings only have been treated, and these generally turned into a brilliant steel-blue or pink colour.

Savage Club, Savoy, W.C., October 26, 1886.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

ANOSIA PLEXIPPUS AT THE LIZARD.—It may be of interest to your readers to know that I have seen another specimen of *Anosia plexippus* at the Lizard this year. Last year I saw four specimens, three of which I captured, as recorded (Entom. xviii. 291). Judging from the fact of only one specimen being seen in the locality this autumn, the insect does not appear to have bred freely, if at all, in the neighbourhood. I was hoping to have found the larva this year, and thought that it might occur on *Vinca major* or *V. minor*, as I suppose they are the nearest British allies of the *Asclepias*, its native food-plant, but was unsuccessful. Amongst other captures this season in Cornwall has been the larva of *Acronycta alni*, which unfortunately died.—ALFRED H. JENKIN; Trewirgie, Redruth, October 13, 1886.

ANOSIA PLEXIPPUS NEAR SWANAGE.—Early in September, while passing a cottage near Swanage, a woman gave my son a large foreign-looking butterfly, which she said her husband had caught in a clover-field hard by. I have since found that it is *Anosia plexippus*.—GEORGE C. STENNING; The Parsonage, Beaulieu, Southampton.

ANOSIA PLEXIPPUS IN BOURNEMOUTH.—Lepidopterists will be interested to learn that a fine specimen of this butterfly has recently been caught in this town by T. Watts, Esq. (of Hilda, Bradbourne Road), who at my request has kindly furnished me with the following account of his capture:—"Strolling along the Westover Road on the 30th of September I saw a large butterfly flying above the road. Watching it for a few minutes it came down and settled on a single dahlia, and leaning over the railings I caught it between my finger and thumb." Great credit is due to Mr. Watts for the manner in which he managed, without any entomological appliances, to take and kill the insect without doing it the slightest injury. It is a magnificent male, measuring four and a half inches from tip to tip, and with the exception of a small chip on the hind margin of the right primary it is absolutely perfect, clearly indicating that it has been bred in the neighbourhood. Thanks to the generosity of the captor the specimen is now added to my collection, and I shall be pleased to show it to any entomologist who may happen at any time to visit Bournemouth. Mr. Jenner Weir, just ten years ago, in commenting upon the occasional occurrence of *plexippus* (*archippus*) in this country, drew attention to the wide range of this Danaid in America, its native habitat, and expressed his belief that the species would probably become naturalised in this country, as it had been in Australia, New Zealand, and New Guinea. The well-authenticated records of captures since, afford ample confirmation of the correctness of this gentleman's view. If *plexippus*, with its capability of adaptation to varying climatic conditions and power of flight, enjoy in this country the same immunity from the attacks of insectivorous enemies, which Bates, Trimen, and other naturalists ascribe to the Danaidæ generally, its rapid propagation may be looked upon as a matter of certainty. Henceforth our list of the British Rhopalocera will be incomplete without the addition of the family "Danaidæ."—W. McRAE; Bedford House, Bournemouth, October, 1886.

ANOSIA PLEXIPPUS IN GUERNSEY.—I have much pleasure in recording the capture, for the first time in Guernsey, of a fine specimen of *Anosia plexippus*. It was taken on Saturday, 2nd of October, by Col. A. H. Collings, in his garden on the outskirts of the town (St. Peter's Port).—W. A. LUFF; 17, Victoria Road, Guernsey, October 11, 1886.

VANESSA C-ALBUM NEAR HEREFORD.—This year there has been an unusual abundance of this species, while last year and the year previously they were very scarce. I have had about 250 pupæ brought to me by hop-pickers, who say there were scarcely any in some of the yards, while in others they were found by dozens.—J. HORNE; The Brewery, Hereford, October, 1886.

COLIAS EDUSA AND DIASEMIA LITERATA (LITERALIS) IN SUSSEX. The question of the presence of *Colias edusa* within our coasts in each year appears to be one of some interest; and as it has not, so far as I am aware, at present been recorded during the past summer, it may be worth noting its occurrence. While collecting in East Sussex in August last I observed two specimens,—one on the 11th and another on the 29th of that month. I also took, in the same locality, a solitary example of *Diasemia literata*.—ROBERT ADKIN; Lewisham, October, 1886.

COLIAS EDUSA.—I have seen but one specimen of this butterfly this year,—a fresh-looking female, leisurely flying along the sea-wall at Maldon on October 4th.—EDWARD A. FITCH.

IS THYATIRA BATIS DOUBLE-BROODED?—I was sugaring in the New Forest in the early part of June last and saw large numbers of *T. batis*, taking about a dozen, some of which were considerably worn. On the 1st of September I was again in the Forest, and to my surprise took five specimens of *T. batis* in perfect condition. Can they possibly have been a second brood?—H. L. EARL; Portree, Manchester, September 23, 1886.

[*Thyatira batis* has previously been observed in England, not only in September, but also in October. It would appear, then, that in some years there are certainly two distinct flights of the species in this country. Probably, however, in such years only a small percentage of the descendants of the June and July imagines attain the perfect state in the autumn months. In the more southern portion of the extensive area inhabited by

T. batis there may possibly be two generations of the insect in each year.—R. S.]

SECOND BROODS.—With regard to *Timandra amataria* being at times double-brooded in the natural state (Entom. 231) I have this season seen two instances of it. In Dorsetshire I noticed a fine specimen in the third week of August, and a somewhat worn one on September 6th. In one locality in this district we this season met with a second brood of *Lycæna minima (alsus)*. I noticed the first specimens on August 10th; the first brood had been numerous. In Dorsetshire, on the sea-coast, a few specimens of *Lycæna ægon* were just emerging on August 17th; this also occurred about the same date last season in the same locality. Would not these specimens be a second brood? It would surely be late for one of a succession of broods. I have never visited the locality at the time this butterfly should be out according to our books. All the commoner species of the Lycænide have again been somewhat abundant in localities I have visited. *L. icarus*, however, has not been so excessively so as it was last season. Has *Lycæna arion* ever been known to be double-brooded? Might this not be probable, from the general tendency there appears to be amongst the “blues” to be so? This species has become, in Gloucestershire, one of the rarest butterflies. From places where, twenty years ago, it managed to hold its own, it has now entirely disappeared. I am afraid this is not from natural causes only.—T. B. JEFFERYS; Clevedon, September 17, 1886.

ACHERONTIA ATROPOS IN SHETLAND.—During a visit to Lerwick this summer I was fortunate enough to secure three specimens of the above-named Sphinx; two were taken in a potato field near Lerwick, and the third at Stoney Hill. The various lists I have been able to consult make no mention of this species, nor indeed of any Sphinx, having been so far taken in the Shetlands. If this is correct, we have an important addition to the already very interesting fauna of the most northern portion of the British Isles.—WILLOUGHBY GARDNER; c 18, Exchange Buildings, Liverpool, October 7, 1886. [The occurrence of *A. atropos* in the Shetlands was referred to, Entom. 147.—ED.]

ACHERONTIA ATROPOS IN IRELAND. — It may not be wholly uninteresting to record the appearance of *A. atropos* in this

neighbourhood, particularly as my lamented friend Mr. Birchall, does not mention this (one of his favourite hunting-grounds) as a locality for the insect. Upon returning from Dublin the other day I was informed that a bat had been caught and was awaiting my inspection, and my little daughter added that it had squeaked while in her hand. Upon the cover being raised I found a very large specimen of the death's-head moth; perhaps it would have been happier for my household had I permitted their shameful ignorance of Zoology to continue, as a feeling of consternation took possession of the domestics upon my announcing the dread name of the unusual visitor.—S. R. FETHERSTONHAUGH; Rokeby, Howth, October 9, 1886.

SPHINX CONVULVULI.—I have to record the capture, by friends of mine, of two specimens of *Sphinx convulvuli*, one at Deal, the other near Starcross, South Devon, on the same ground where I recently took *Callimorpha hera*.—J. JAGER; 180, Kensington Park Road, W., October, 1886.

SPHINX CONVULVULI AT LOUGHBOROUGH. — At midday, on October 4th, a fine light-grey female specimen of *Sphinx convulvuli* was captured at Loughborough Station. It was kindly brought to me alive, none the worse for its journey.—WM. TRISTRAM; 44, Hazel Street, Loughborough, October 10, 1886.

SPHINX CONVULVULI AT WEYMOUTH.—I was fortunate enough to meet with a very fair specimen of this *Sphinx*, sitting on some palings at Weymouth, laying its eggs. I hope that this record of its capture may prove interesting, as it is the first time, as far as I know, that it has been taken in this district. The capture was made in broad daylight, when, I believe, it is rather unusual for the moth to appear. It seemed strange also that it should deposit its eggs on these palings, there being none of its food-plant anywhere near.—A. W. P. CAMBRIDGE; Weymouth College, October 7, 1886.

DEIOPEIA PULCHELLA AND ENNOMOS ALNIARIA AT RAMSGATE. Specimens of these two insects, lately taken at Ramsgate, have just been brought to me for verification. The latter seems now to be well established in this country, but can scarcely be considered as otherwise than a semi-naturalised foreigner.—THEODORE WOOD; St. Peter's, Kent, October 6, 1886.

AUTUMNAL EMERGENCE OF *ARCTIA CAIA*.—Last June a female *Arctia caia* deposited a batch of ova, from which I have at the present moment larvæ, pupæ, imagines, and some ova which have not yet yielded larvæ.—II. SHARP; 23, Union Street, London, W.

[Some entomologists, who rear this species for the sake of varieties, get three distinct broods annually by rearing them in heat, and the latter broods are usually most prolific in variation.—J. T. C.]

OCNERIA DISPAR. — The Rev. J. Seymour St. John asks (Entom. 250) why so many of the females of *Ocneria dispar* that he breeds are cripples. It is some years since I reared this species, but I well remember that when I did so my experience very closely coincided with his, and I have little doubt that the number of cripples produced in each instance arose from the same cause. Mr. St. John does not mention the source whence his young larvæ were derived, but as it is very doubtful whether this species has occurred in a wild state in this country for many years past, it may be inferred that they were, as in my case, the offspring of parents inbred for many generations; and if that be so, I think we need not look beyond the generally accepted theory, that inbreeding tends towards a deterioration of species, for a solution of the problem. The impaired vitality would be likely to show in the imperfect development of the wings, and the females being presumably the weaker (although in this case considerably larger) sex, would be likely to be the more readily affected.—ROBERT ADKIN; Wallfield, Lingards Road, Lewisham.

[In confinement the females of *Ocneria dispar* probably have but little chance of employing their wings. The disuse of any organ, generation after generation, tends to produce a cramped or wasted condition in such organ.—R. S.].

OCNERIA DISPAR.—Since finding the larvæ of this species in Warwickshire last year, as recorded (Entom. xviii. 263), I have had a little experience in breeding the moth, and have noticed exactly the same thing as the Rev. J. Seymour St. John draws attention to (Entom. 250), namely the crippled state of a number of the females on emerging. Although I have had some specimens which have not developed in the slightest degree after leaving the pupa, still the greater number of cripples were only crippled insomuch that the edges of their

wings were crumpled, and this seems also to have been the case with Mr. St. John's specimens. I have not so far ascertained the cause of the crippled condition of these individuals, but should imagine that it is due to the insect being unable to free itself from the pupa at the proper time, owing probably to the hardening of the pupa shell. If this be the case, the pupa should naturally be kept damp. There is also another point which has attracted my notice in the breeding of this insect, which is this, that all the males come out considerably in advance of the females. On reference to my diary, I find that out of a large number of both sexes which emerged, 28 males appeared between the 4th and 7th of August, and that from the 10th to the 17th of the same month 35 females emerged in my breeding-cages. I should like to know whether anyone else has noticed this fact in breeding *Ocneria dispar*.—W. H. BLABER; Beckworth, Lindfield, Sussex, October 21, 1886.

OCNERIA DISPAR.—In reply to the Rev. J. Seymour St. John (Entom. 250), I may say that this year I had fifteen female pupæ of this insect, and I consequently congratulated myself on being at least able to breed a nice series to replace some old specimens which I then possessed. I was, however, doomed to be disappointed, as out of the fifteen I only bred one perfect insect. Of the remainder, four were complete cripples, six with just the hind wings crumpled up at the edge, and four with one wing only slightly crippled. I do not think handling the larvæ was the cause, as I always use a camel-hair brush to remove the caterpillars when necessary, and *never* with the hand. Last year I had about the same result, breeding two perfect insects from twenty of their pupæ. Nearly all the males which I have bred have been perfect.—A. E. HALL; Norbury, Pitsmoor, Sheffield.

NOTES FROM SOMERSETSHIRE.—I am sorry to report another season of scarcity, especially as regards Noctuæ, in my neighbourhood. Very few, even of the more common species, such as *Triphæna pronuba*, *Phlogophora meticulosa*, *Anchocelis pistacina*, came to sugar; and even *Polia flavicincta* were much fewer than is usual. I have had only two larvæ of *Acherontia atropos* brought to me this year, though last year so very plentiful. The autumnal butterflies *Vanessa io* and *V. atalanta* were very common. I was in Switzerland and Italy in July, and in both

I found insect life most abundant.—H. W. LIVETT; Wells, Somerset, October, 1886.

LARVA OF *APOROPHYLA AUSTRALIS*.—I took three larvæ on June 4th, feeding on *Silene maritima*. When unable conveniently to get this food-plant fresh they took very kindly to the common garden white pink. They were nearly full-fed when I found them, and in a few days buried themselves in sea-sand at the bottom of breeding cage. On September 24th I had the satisfaction of finding two male specimens of *Aporophyla australis* had emerged in perfect condition. I do not know whether the plant on which these larvæ were feeding has been recorded as a food of this species. The caterpillars differed principally in colour from the description given by Newman—quoting from Guenée. They were of a beautiful glaucous green, with marks much according to Newman. The difference of colour may probably be ascribed to the peculiar green of the *Silene* on which they were feeding.—FRANK E. LOWE; St. Stephen's, Guernsey.

VARIETY OF *MELANIPPE MONTANATA*.—I send for your inspection a variety of *Melanippe montanata*, which I captured last summer near this town. As it is a striking contrast to the suffused example taken by the Rev. H. T. Hutchinson, figured in the 'Entomologist' for 1881, I thought it might be of interest.—C. K. TERO; B 32, Kent Street, Grimsby, October 18, 1886.

[In this very interesting variety the usual dark central fascia of the type is only represented by a small quadrate spot on the costa; another small transverse and somewhat linear patch enclosing the black discoidal spot, and two faint-coloured little dots just above the inner margin. In other respects it is almost or quite normal. Many examples of *M. montanata* exhibit a tendency to the character of marking of which the variety under consideration is an extreme form, A similar form is also met with in *M. fluctuata*.—ED.]

CICADA *HÆMATOIDES*.—On the 7th of June I took a specimen of this insect in the New Forest, near Rufus' Stone. It was captured whilst flying across a riding in an enclosure.—W. R. BUCKELL; Romsey, Hants.

SIREX JUVENCUS IN YORKSHIRE.—I found a fine specimen of this sawfly in my room this morning.—C. WHEELER; Ingleby Manor, Northallerton, Yorks, September 29, 1886.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. *October 6th, 1886.*—Robert McLachlan, Esq, F.R.S., President, in the chair. Mr. W. Bartlett Calvert, of Santiago, Chili, was elected a Fellow, Mr. McLachlan exhibited a number of seeds of a Mexican species of Euphorbiaceæ, popularly known as “jumping seeds,” recently received by him from the Royal Horticultural Society, He stated that these seeds are known to be infested with the larvæ of a species of Tortricidæ, allied to the apple *Tortrix*; they were first noticed by Professor Westwood, at a meeting of the Society held on the 7th June, 1858, and the moths bred therefrom were described by him as *Carpocapsa saltitans* (cf. Proc. Ent. Soc., 2nd series, vol. v., p. 27). These seeds have since, from time to time, been referred to both in the United Kingdom and America. A discussion ensued in which Mr. Pascoe, Mr. Poulton, Mr. Roland Trimen and others took part. Mr. Roland Trimen exhibited, and read notes on, some singular seed-like objects found in the nests of *Termites*, and also in those of true ants, in South Africa. They were apparently of the same nature as those from the West Indies, described in 1833 by the Rev. L. Guilding as *Margarodes formicarius*, which was usually referred to the Coccidæ, as allied to *Porphyrophora*. They were of various shades, from yellowish pearly to golden and copper-colour, and were strung together by the natives like beads, and used by them as necklaces and other personal ornaments, as, according to Mr. Guilding, was the case with the West Indian species. Mr. W. F. Kirby exhibited, on behalf of Mr. John Thorpe, of Middleton, a long series of buff and melanic varieties of *Amphidasis betularia*, and read notes on them communicated by Mr. Thorpe. Mr. Kirby also exhibited, on behalf of Mr. Nunnery, who was present as a visitor, a dark variety of *Argynnis aglaia* from Caithness, and a tawny-coloured variety of *Vanessa urticae* from Bournemouth. Mons. Alfred Wailly exhibited a fine series of Saturnias and other Bombyces, mostly bred by him, from South Africa; also specimens of *Dirphia tarquinia*, *Attacus orizaba*, *Platysamia cecropia* and *P. ceanothi*, *Callosamia angulifera*, *C. promethæa*, *Philosamia cynthia*, and other species from Central America. He also exhibited ova of *Saturnia tyrrhea*, pupæ of this and other South African species, and a cocoon of

Bombyx orchadama from Madagascar. Mons. Wailly stated that several of the large South African Saturnidæ formed no cocoons, the larvæ entering the earth to undergo the change to the pupal state. Mr. Trimen said he was able to confirm this statement. The Rev. W. W. Fowler exhibited a number of minute *Acari*, which had been doing injury to fruit trees near Lincoln. Mr. Poulton gave an account of the experiments recently made by him with the larvæ of several species of the genus *Vanessa*, for the purpose of ascertaining the relations of pupal colour to that of the surface on which the larval skin is thrown off, which had formed the subject of a paper read by him last month before the British Association. He also exhibited the frame constructed by him for the purpose of these experiments. The President and Messrs. Trimen, Waterhouse, White, Hall, and others took part in the discussion which ensued. Mr. Slater exhibited a specimen of *Prionus coriarius*, found in Devonshire on fennel, and a specimen of *Calandra palmarum* found alive at Pembroke Dock. Mr. Enock exhibited *Mymar pulchellus*, and a specimen of *Atypus piccus* recently taken on Hampstead Heath. Mr. Elisha exhibited a series of *Gelechia hippophaëlla* (Sch.), bred from larvæ collected at Deal on *Hippophaë rhamnoides*. Mr. Billups exhibited *Echthrus lanceifer*, Gr., a species of Ichneumonidæ new to Britain, taken at Walmer on the 15th August last. He remarked that Brischke had bred members of this genus from *Sesia sphegiformis*, *S. formiciformis*, and *Leucania obsoleta*; but that in this country the genus was little known, only one species (*Echthrus reluctator*) being mentioned in Marshall's list of British Ichneumonidæ. Mr. E. A. Butler exhibited a male and female of *Macrocoleus tanaceti* from Bramley, near Guildford; living specimens of *Chilacis typhæ*, received from the Rev. E. N. Bloomfield, of Guestling, Hastings; and a pair of *Harpalus discoideus*, obtained in August last, on a heath near Chilworth, Surrey. Mr. A. J. Rose exhibited specimens of a mountain form of *Lycæna virgaurea*, recently collected by him in Norway. Mr. Champion exhibited *Teratocoris antennatus* and *Drymus pilicornis*, taken near Sheerness. Mr. W. White exhibited specimens of *Proctotrypes ater* (Nees); he also exhibited a specimen of *Chelonia caia* with abnormal antennæ, and read notes on the subject. Mr. Elisha read a paper "On the life-history of *Geometra smaragdaria*." Mr. C. O. Waterhouse communicated a paper

"On the Tea-bugs of India and Java." During the meeting a telegram was received from Mr. Freeman, of Plymouth, announcing the recent capture, in Cornwall, of *Anosia plexippus*.—H. Goss, *Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. *October 7th*, 1886.—R. Adkin, Esq. F.E.S., President, in the chair. Mr. Billups exhibited *Echthrus lancifer*, a species of Hymenoptera new to Britain, taken by him at Walmer in August last, and contributed notes on the genus *Echthrus*. Mr. West (Streatham), a bred series of *Spilosoma fuliginosa*. Mr. Wellman, examples of second broods of *Melanippe tristata*, *Acidalia emarginata*, *A. rusticata*, and *A. strigilaria*, all reared from ova. Mr. Jager, *Callimorpha hera* (including the variety *lutescens*) taken in the south of Devon; a number of forms of *Bryophila muralis* from Dawlish, the whole series showing a local tendency. Mr. J. T. Williams, *Eupithecia linariata*, bred from larvæ taken July last, which fed up and emerged in about fourteen days. Mr. South, *Sesia culiciformis*, short series of *Mimæscoptilus zophodactylus* and *M. bipunctidactyla*; series of *Thera variata* from Switzerland, England and Scotland; and contributed notes with reference to this latter exhibit. Mr. Elisha, *Agrotis ashworthii* and *Dasycampa rubiginea*. Mr. Adkin, a number of species of Lepidoptera from East Sussex, among which were varieties of the under sides of *Lycæna icarus* and *L. corydon*, forms of *Crambus tristellus*, *C. geniculeus*, and *Diasemia literata*; and he contributed notes on this last-mentioned species. Mr. J. J. Weir, a variety of *Apameis cardui* from Graham's Town; a white and black specimen of *Colias electra* from the same locality, showing that that species exhibited a similar dimorphic condition of the female to that which obtains in *C. edusa*. Mr. Weir adverted to a note of Mr. G. D. Hulst ('Entomologica Americana,' ii. 104), August, 1886, in which it was stated that the name *Anosia plexippus* was the name the British Museum gave to an insect the rest of the lepidopterological world called *Danaus archippus*. Mr. Weir, after quoting several authors, said both the generic name *Anosia* and the specific name *plexippus* were long ago applied to this insect, the latter, indeed, for more than a century and a quarter. Mr. Cooper exhibited a brightly coloured variety of *Vanessa urticae*. Mr. Sabine, a variety of

Papilio machaon; varieties of *Zygæna filipendulæ*, including several of the yellow form; the series having been taken in Kent. Also varieties of *Lycæna bellargus*, among which were a number of light female forms and two black males. Mr. Sabine stated that, with the exception of the latter, the whole number had been taken either in the spring or autumn of the present year, and he was of opinion that they were hybrids between *bellargus* and *icarus*, he having on one occasion, at the same locality, taken a male of the former *in cop.* with a female of the latter species. Mr. Weir remarked that the light varieties of the female were undoubtedly hybrids between the two species mentioned by Mr. Sabine, but the curious part of the matter was, that they should have been taken both in the spring and autumn. With regard to the black forms of the male, he had neither seen nor heard of anything of the kind before. Mr. W. West (Greenwich) exhibited two species of Coleoptera from Shirley Heath, viz., *Balaninus rubidus* and *Erirrhinus pictoralis*. Mr. T. R. Billups, a species of *Hydradephaga*: *Colmybetes fuscus*, from which had emerged a lepidopteron, probably *Endrosis fenestrella*, the empty pupa-case being partly visible, and remaining firmly attached to the body of the beetle.

October 21st, 1886.—The President in the chair. Mr. T. R. Billups exhibited the following species of Ichneumonidæ:—*Trogus lutorius* and its rare ally *Trogus alboguttatus*, bred by Mr. R. Adkin from *Chærocampa porcellus*; also a fine series of *Apanteles jucundus*, both sexes being represented, and the cluster of cocoons from which they emerged. Mr. Billups stated these little Microgasterides were bred from the larvæ of *Pieris brassicæ* from Ireland, and which were handed to him by Mr. South. This was the first time the insect had been recorded as having been reared; and the Rev. T. A. Marshall, in describing this new species last year in his 'Monograph of the British Braconidæ,' had but one specimen to work from, a female taken by sweeping in Northamptonshire. Mr. Levett and Mr. Watson exhibited specimens of *Acherontia atropos*. Mr. Helps, *Lasiocampa quercifolia*. Mr. West (Streatham), two yellow varieties of *Bryophila perla* from Margate. Mr. W. G. Sheldon, *Plusia chryson*, *P. festuæ* and *P. pulchrina*. Mr. Ficklin, a long series of *Pædisca sordidana*. Mr. Jager, *Sphinx convolvuli* taken at Starcross, Devon. Mr. Gibb and Mr. Tugwell both exhibited

Zygæna exulans from Braemar. Mr. Tugwell, who also exhibited an empty pupa-case of this species made up among crowberry, drew attention to two examples of the Swiss form of the species in Mr. Gibb's box, and pointed out the difference between them and the variety *subochracea* of White. Mr. Mera, *Eugonia autumnaria* (bred). Mr. Elisha, bred examples of *Dianthæcia irregularis*. Mr. Wellman, a number of species taken or bred during the season — *Zonosoma pendularia*, *Acidalia rusticata*, *Cidaria picata*, *C. sagittata*, and *C. sileacata*. Mr. R. Adkin, *Polia flavicincta*, bred from ova deposited by a moth captured by Mr. Cooper last autumn; and bred examples of *Acidalia inornata*. This gentleman also exhibited, on behalf of Mr. W. Farren, of Cambridge, long series of *Bryophila muralis*, *B. impar* and *B. perla*, the first from Folkestone, and the last two from Cambridge. With reference to this exhibit, Mr. Adkin read some interesting notes from Mr. Farren, pointing out the distinguishing characteristics of *muralis* and *impar*. For the purpose of comparison Mr. Wellman exhibited his very fine series of *muralis*, and Mr. Jager the reddish forms of the same species taken by him at Dawlish. Mr. Weir said, after looking carefully at Mr. Farren's row of *impar* and the row of *muralis* taken by Mr. Wellman, and in the present state of the question, he felt disposed to say *impar* was not a clear species, but it ought to be bred from the larval stage; and it appeared to him that Mr. Farren's *impar* were only dominant varieties of *muralis* in the peculiar district in which they were taken. Several other members concurred in Mr. Weir's remarks. Mr. Carrington said he wished to call attention to the fact that somebody was attempting to pass off on entomologists, at prices varying considerably, stained or otherwise altered *Vanessidæ* as varieties, and there appeared to be a brisk trade doing in such specimens. It would be as well for the members of the Society to be on their guard against purchasing such so-called varieties. Mr. Weir also spoke on this subject, and exhibited specimens of *V. urticæ*, *V. atalanta*, and others, which had been coloured by a friend for the purpose of showing how these species could be treated. Mr. Shearwood exhibited a large number of preserved larvæ, among which were *Toxocampa pastinum*, *Eupithecia irriguata*, the black variety of *Abraxas grossulariata*, *Nola albulalis*, and *Deilephila galii*.—H. W. BARKER, W. A. PEARCE, Hon. Secs.

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[No. 283.

NOTES FROM NEWBURY.

BY THE REV. C. A. SLADEN.

I HAVE not seen the flower of the hogweed or cow-parsnip (*Heracleum sphondylium*) mentioned as an attraction to moths, and I should like to add it to the list of attractive baits, though others I dare say have already found it so. My experience came about thus:—Wanting to get a series of *Melanippe procellata*, I had some little way to go to the nearest spot where the wild clematis grew, and along the sides of the lane by which I went the hogweed in places grew plentifully. Noticing moths apparently hovering over the plant, I began to examine the blossoms with my lamp, and was surprised to find sometimes two or three moths at supper on one flower-head, and to my relief, when I tilted the flower they dropped into the poison-bottle as quietly as possible. After this find, for two or three nights in the first fortnight in July, I turned my attention to the hogweed; and though I caught nothing rare, I had the pleasure of taking my pick from a great number of moths. There were the following 19 species in plenty:—*Leucania conigera*, *L. lithargyria*, *L. impura*, *L. pallens*, *Axylia putris*, *Xylophasia lithoxylea*, *X. monoglypha* (*polyodon*), *Apamea didyma* (*oculea*), in its numerous forms, including the black variety with or without the white or yellow reniform spot; *Miana strigilis*, *M. fasciuncula*, *Caradrina morpheus*, *C. taraxaci* (*blanda*), *Agrotis segetum*, *A. exclamationis*, *Noctua triangulum*, *N. brunnea*, *N. baia*, *Melanippe procellata*, *Phibalapteryx tersata*. At the same time I caught on

the wing, amongst other things, *Hepialus humuli*, *Odonestis potatoria*, *Cymatophora duplaris*, *Toxocampa pastinum* (only 1), *Boarmia repandata*, *Asthena luteata*, *Acidalia dimidiata* (scutellata), *A. trigeminata*, *Cabera exanthemata*, *Abraxas grossulariata*, which several times deluded me into capturing it, until I recognised its flapping flight; *Ligdia adustata*, *Melanippe unangulata*, *M. sociata*, *Scotosia retulata*, *Cidaria fulvata*, *C. dotata* (*pyraliata*).

While on the subject of baits, I am glad to see Mr. Harcourt Bath, in the October number of the 'Entomologist,' has mentioned sunflowers as another attraction, and I hope to avail myself of this bait another season.

I should like also to notice some varieties bred this season:—
(1) *Cabera pusaria*. Very white, the transverse lines hardly distinguishable, but on each fore wing a short broadish black streak, just above and parallel with the inner margin, and about halfway between the base and hind margin; there is also a black spot at the anal angle of each hind wing.

(2) *Arctia menthastri*. A dark variety, having the black spots in the centre of the fore wings large, and amalgamated into two almost uninterrupted lines crossing the wings and much angled towards the hind margin; there are also five large and wedge-shaped spots on the hind margin.

(3) *Zygæna filipendulæ*. The three pairs of spots are united. A few years ago I bred one yellow variety from a number of cocoons picked here.

I have also a beautiful variety of *Lycæna corydon*, female, of which I caught some numbers several years in succession at one particular spot, when living in Wiltshire. The ground colour of the wings is silvery blue, as in the male, but with the normal hind-marginal row of spots on both fore and hind wings. The underside of the wings is the usual colour of the female, but in specimens the spots vary, coalescing and forming long streaks. I have now only four specimens of this variety left, and I went down this year, and once before, to get some more, if possible, but I was unsuccessful on each occasion, the day turning out badly, and hardly a butterfly on the wing or to be found at rest.

Looking through my list of captures, I find that during the six years I have been here I have caught, within a range of two or three miles, 335 species of Macro-Lepidoptera, comprising

41 Diurni, 36 Nocturni, 3 Drepanulidæ, 11 Pseudo-Bombyces, 132 Noctuæ, and 112 Geometræ, and I have no doubt this list would be largely increased if the country round were thoroughly and systematically worked.

Burghelere, Newbury, October 12, 1886.

A MONTH IN NORTH CORNWALL.

By W. S. RIDING, M.D., B.A.

TREVALGA, where I was staying last September, is situated on the north coast of Cornwall, between Boscastle and Tintagel. It is elevated some 200 feet above sea-level, and backed a short distance inland by hills rising 700 or 800 feet. Like the rest of the county, it would be treeless were it not for the wooded valleys trending seawards. The chief of these are that at Boscastle, where the Vallency runs over a rocky bed between overhanging alders and willows, with a sprinkling here and there of ash and oak, and that at St. Knighton's Kieve, on the west, where a nameless stream falls in a cascade of 40 feet, and winds its course through a pretty glen wooded with beech and ash, larch and pine, to the Rocky Valley, known well to every landscape-painter since Creswick's time. Both valleys are luxuriantly clothed with the usual plants of such localities, hemp-agrimony and golden-rod being especially abundant. One point of interest to the entomologist is the unusual growth of ivy, creeping over cottages and outhouses, covering ruined walls, on boulders of rock, and somewhere in most of the hedges. The lover of ferns, too, can find most of our native species, and amongst them *Osmunda regalis* in fair abundance, *Hymenophyllum tunbridgense*, and, if he does not mind wet feet and soiled clothes, *Asplenium marinum* in the shaded crannies of the rocks; and, with the help of a scaling-ladder, *Adiantum capillus-veneris* growing wild on the cliffs. The geological formation is Devonian slate and schist, the Devonian system being overlapped by the Carboniferous between Trevalga and Boscastle. From the stratifications being unequally acted on by denuding influences, the exposed rocks look like fretted and chiselled ruins of ancient castles, which the imagination can easily associate with the legends of the neighbourhood.

Sugaring inland was unprofitable; but on the coast, besides the usual autumnal species, *Anchocelis lunosa*, *Phlogophora meticulosa*, *Agrotis suffusa*, *Hydræcia micacea*, &c.,—the local insects, *Polia xanthomista* var. *nigrocincta*, *Polia flavicincta*, *Aporophyla australis*, *Epunda nigra*, *E. lichenea*, and *Agrotis saucia*, were attracted. I think it probable, from the similarity of the districts and the abundance of the food-plants, that *P. nigrocincta* is sparsely distributed along the coast of Cornwall. Only two males and a few females were taken; the former were somewhat worn, though one was taken on September 6th (this was probably owing to the unusually rough weather about that time). The insects did not put in an appearance on very windy nights. The females are larger than the males (males, 1" 5''; females, 1" 6''). None were found after September 20th. The *Polia flavicincta* were grayer and darker than the specimens I took near London some years ago, which seem to have a more general diffusion of the yellow colour. In many parts the ivy was in full flower towards the end of the month, and became very attractive to insects. Unfortunately the weather was unpropitious, but I took *Xylina socia* (*petrificata*), *Polia flavicincta*, *Epunda lichenea*, *Anchocelis pistacina*, &c., off the blossoms. In this part of Cornwall the fine days seem generally to be accompanied by a wind, which has a detrimental component from the east; and the warm south-west winds, which would otherwise afford suitable entomological evenings, too frequently bring with them wet and fog.

By beating in the valleys, during the daytime, many larvæ fell from the alder, willow, oak, beech, elder, larch, &c. Amongst others those of *Notodonta ziczac*, *Lophopteryx camelina*, *Thyatira deraea*, *Drepana binaria* (*P. hamula*), *Selenia tetralunaria* (*illustraria*), *Gnophria rubricollis*; besides the usual supply of *Dasychira pudibunda*, *Amphidasys betularia*, *Cabera exanthemaria*, &c.; and many other larvæ, Geometræ especially, which I cannot name with certainty till their appearance as imagines. Larvæ of *Eupithecia virgaureata* were shaken off the golden-rod, together with those of *E. castigata*; and those of *Spilosoma fuliginosa* and *Bombyx rubi* were frequently met with. A considerable number of pupæ of many different species were taken from under the moss and tufts of grass on old walls, and at the roots of trees. The day-flyers were represented mostly by

Gonopteryx rhamni, *Vanessa io*, *V. urticæ*, *V. atalanta* (in great numbers), *Pararge egeria*, and worn fritillaries. The blues were scarce, and limited to *Lycæna icarus* and *L. astrarche*. The Geometers were few and far between, and these only the generally-distributed autumnal insects.

25, Endsleigh Gardens, N.W., October, 1886.

NOTES ON MICRO-LEPIDOPTERA.

BY ALFRED THURNALL.

ALTHOUGH Tortrices have not been quite so abundant this season as last, I have managed to obtain a fair number of species, of which I may mention, excluding the very commonest, the following:—

Tortrix sorbiana, beaten and bred from oaks in July. *T. forsterana*, a series bred from larvæ and pupæ found between ivy leaves at Whittlesford.

Dichelia grotiana, three only beaten from birch; always seems more or less worn.

Rhacodia caudana, the var. *excavana*, beaten from Poplar.

Penthina corticana, common amongst birch at Wanstead. *P. gentiana*, bred freely from Teazle heads, July to September. *P. sellana*, Boxhill, and also near Gravesend, scarce. *P. fuligana* (*carbonana*), a series bred from Wicken pupæ.

Antithesia salicella, Wanstead, at rest on willows, end of July.

Spilonota trimaculana, beaten from hawthorn, not common. *S. rosæcolana*, one only beaten from rose at Loughton.

Aspis udmanniana, larvæ very common on bramble.

Sideria achatana, bred rather freely from hawthorn.

Sericoris bifasciana, rather common at Wanstead, flying around some Scotch firs.

Roxana arcuana, flying over fern in the forest.

Euchromia purpurana, flying amongst *Sonchus arvensis*, beginning of July, near Gravesend.

Orthotania striana, males, flying over rough grass in July.

Sciaphila nubilana, very abundant in some districts amongst hawthorn. *S. hybridana*, bred from flowers of Compositæ.

Sphaleroptera ictericana, bred from hawkweed, and also flowers of *Lychnis*.

Capua favillaceana, rather local amongst oaks in June.

Phocopteryx uncana, common amongst birch and ling. *P. comptana*,

swarming at Boxhill in April, and again in August. *P. mitterpacheriana*, a few bred from folded beech leaves gathered in the autumn of last year. *P. upupana*, three beaten from birch in June, but only one worth pinning.

Grapholitha ramella, local, among birch, and bred from the catkins. *G. nisella*, not rare on poplar trunks at Wanstead. *G. cinerana*, one only, on poplar trunks at Wanstead. *G. subocellana*, beaten from willows at Loughton, &c. *G. nævana*, bred freely from shoots of holly.

Phlæodes tetraquetiana, very common amongst birch. *P. immundana*, beaten from alder in May, rather rare. *P. demarniana*, beaten from birch in June, scarce.

Pædisca bilunana, bred from birch catkins. *P. profundana*, beaten from oak and whitethorn in July.

Ephippiphora brunnichiana, ten males and nine females bred from coltsfoot roots, dug up in the winter. *E. trigeminana*, larvæ common at roots of ragwort in November. *E. fenella*, about thirty bred from roots of mugwort dug up in April at Whittlesford. *E. nigricostana*, a series bred from *Stachys* stems from same locality in May. *E. obscurana*, bred rather freely from galls gathered in the forest in the winter.

Semasia ianthiana, larvæ tolerably common, but local in spun-together berries of hawthorn in September. *S. rufillana*, bred freely from wild carrot heads gathered late in the autumn.

Coccyx strobilella, two only bred from a large number of fir cones picked up at the end of April. *C. splendidulana*, bred from oak galls.

Heusimene fimbriana, three bred from oak galls.

Retinia buoliana, bred from shoots of Scotch fir. *R. pinivorana*, common at Wanstead, flying round firs.

Carpocapsa grossana, bred sparingly from beech mast.

Stigmonota leguminana, one small specimen, the sole result of several evenings' work! *S. perlepidana*, common in one spot at Loughton, flying high in the hot sunshine. *S. internana*, the males not uncommon, Loughton, &c. *S. compositella*, captured at the same time, scarce. *S. flexana* (*weirana*), twenty-eight bred from united beech leaves gathered at Loughton in October. *S. nitidana*, bred sparingly from oak leaves gathered at Wanstead. *S. regiana*, several from larvæ spun up under sycamore bark. *S. germarana*, nine beaten from oak beginning of June. *S. roseticolana*, twenty-seven bred from rose "hips" gathered in September; they require rotten wood to spin up in.

Dicrorampha politana, not uncommon at Leyton, &c. *C. sequana*, local, below Gravesend, &c. *D. simpliciana*, bred sparingly from mugwort roots.

Pyrodes rheediella, flying around hawthorn in May.

Catoptria albersana, three or four beaten from honeysuckle, and what

must be the larvæ in the folded leaves beginning of October. *C. juliana*, common at rest on oak trunks at Wanstead. *C. hypericana*, bred freely from young tops of *Hypericum* gathered at Boxhill in May. *C. candidulana*, very common both in the larva and imago states in the Thames Salt Marshes. *C. fulvana*, scarce, among thistles, &c., Boxhill. *C. cacimaculana*, common near Headly lane in July. *C. æmulana*, a series bred from flowers of *Aster tripolium* gathered in October.

Lobesia reliquana, common in the forest, &c., flying around the pollard oaks.

Eupacilia nana, swarming over birch shrubs at Wanstead. *E. maculosana*, flying in the sunshine over blue bells. *E. angustana*, generally common. Some specimens taken below Gravesend are exceptionally fine. *E. affinitana*, bred from dead stems of *Aster tripolium*. *A. udaria*, bred very sparingly from *Alisma plantago* stems.

Argyrolepis zephyrana, seven bred from roots of wild carrot. *A. badiana*, larvæ in seed-heads of burdock beginning of October, with *Lappella*. I fancy the books are wrong in saying that this larva feeds in the stems and roots of burdock. I can only find them in the seed-heads; perhaps they gnaw into the roots or stems for the purpose of pupating. *A. aneana*, a fine series bred from ragwort roots dug up in April near Gravesend. I have since found this larva much nearer to London.

Conchylis francillana. Until last week (October 31st) I had looked in several places in vain for this larva, but in casually splitting open a stem of *D. carota* I found three full-fed larvæ. It seems to be much more local than *dilucidana*. *C. dilucidana*, bred rather freely from dead stems of wild parsnip. *C. smeathmanniana*, larvæ in October, common in seed-heads of Milfoil, which I think must be this species. I failed to breed anything from a lot of larvæ obtained last year.

Aphelia osseana, not uncommon on Boxhill in July. I did not meet with any rarities amongst the Crambidæ or Phycidæ. The following were the best species:—

Platytes cerussellus, swarming on one part of Boxhill, and also in the "Salterns" below Gravesend; two very different localities!

Crambus falsellus, bred from moss growing upon an old wall at Whittlesford. *C. pascuellus*, rather local, but common wherever found. *C. perlellus* (var. *dealbellus*). Brentwood beginning of July. *C. inquinatellus* and *geniculellus*, both common in the forest.

Ilithya semirubella, Boxhill in July, not so common as usual.

Myclophila cribrum, larvæ in heads of thistles in September.

Homæosoma sinuella. I was much surprised at meeting with this species flying amongst grass, &c., on a railway bank, many miles from the sea. I always thought it was confined to the south coast.

Phycis fusca, very sparingly amongst ling and birch. Seems local and uncommon in this district. I did not meet with *betulæ* at all this season. *P. adornatella*, swarming as usual on one part of Boxhill at the end of June.

Rhodophæa consociella, larvæ very common on oaks in the forest, &c. *R. advenella*, from six larvæ found in June I bred six fine imagos. Loughton, &c. From some hawthorn berries gathered at the end of September, besides the larvæ of *S. ianthiana* already recorded, *Laverna atra* larvæ came out in their usual abundance, and also three very small larvæ of what must be *R. advenella*; their markings and colour are just the same as the more mature ones I got in the early summer, but rather paler. It would be interesting to know that this larva in its early stages feeds in the fruit of the hawthorn. *R. suavella*, bred eighteen fine specimens from larvæ found feeding on hawthorn in the forest in June last. I did not meet with either *tumidella* or *marmorea* this year.

IS HEINEMANN'S *DICRORAMPHA* SEPARABLE FROM
D. CONSORTANA?

By RICHARD SOUTH, F.E.S.

MR. W. MACHIN, in recording (Entom. 232) the capture of a *Dicrorampha*, states that they had been identified by Mr. C. G. Barrett as true *distinctana*, Hein.

In his correction of a supposed error in the determination of my *Dicrorampha* sent him in 1882 (E. M. M. xxiii. 162), I note that Mr. Barrett does not make any reference to the above. I have not seen Mr. Machin's insect, but I understand that it is not at all like my specimen, and could not possibly be confounded therewith. If this is a fact, then Mr. Machin's insect cannot agree with Mr. Barrett's description of *distinctana* (E. M. M. xviii). My insect, on the other hand, is so accurately portrayed, that one might very well believe that it was the actual specimen from which the description referred to was taken. Now that Mr. Barrett has had this specimen a second time under examination, and finds that it wants certain marks which he has discovered in his types of Heinemann's insect (which he says should serve, if constant, to distinguish *distinctana* from my insect, i. e., *consortana*), the logical conclusion would appear to be that the English and not the German insect was the one

described. However, this phase of the matter is perhaps not of particular moment.

Mr. Barrett considers that Heinemann's insect is specifically distinct from *consortana*, and this decision would seem to have been arrived at after carefully comparing his German types of *distinctana* with a bred series of *consortana*, which I had the honour of submitting to his notice. Although that series of *consortana* consisted of individuals which in some trivial respects differed one from another, there were among them specimens which possessed the particular character of marking claimed for *distinctana* only.

I must confess myself unable to decide on the merits of a more or less *squared* wing apex, especially when such comparison is made between caught and bred specimens, but I am inclined to think that in this particular case such distinctions are unimportant.

As regards the pale dorsal mark of *distinctana* being "broader at the apex, and more strongly divided, each division being again divided by a black line," I can only say that in all the bred *consortana* I sent to Mr. Barrett the dorsal blotch is exactly so divided and subdivided, but such division is more distinct in some individuals than in others, and it may be that in none of them are the divisions so pronounced as in Mr. Barrett's German types. Again, in the majority of the specimens the dorsal blotch extends in a slightly oblique direction more than halfway across the wing, but in one or two examples this mark is distinctly broken at the middle of the wing, and its continuation forms a round or nearly round spot just beyond the middle and towards the hind margin of the wing. In these last the apex of the dorsal blotch may be said to be broad.

The costal streaks in the bred *consortana* are usually seven in number, and are arranged in the following order:—a pair before the middle, another pair on the middle, and three singly at regular intervals between the last pair and the apex. In some specimens there are an additional pair towards the base, in others the pair before the middle are absent, and in one example the single streaks only are clearly defined. The ocellus is enclosed between the metallic (silvery blue) lines which curve across the wing from the third and fifth costal streaks, counting from the apex. I may observe that the streaks referred to as occurring in pairs are

not always quite close together, but are relatively nearer each other than to their fellows on either side.

The captured *consortana*, compared with bred examples, are noticeable on account of their lighter colour and more distinct ocelli; this is, I think, due to the absence of the dark powdery scales found so abundantly on the bred specimens.

As far as I can form an opinion from the foregoing facts, I find myself unable to accept Mr. Barrett's decision that Heinemann's insect is specifically distinct from *Dicrorampha consortana*. Whilst entertaining every respect for Mr. Barrett's judgment in these matters, I venture to suggest that he was less in error in his original determination of my insect than he now is in his correction.

12, Abbey Gardens, London N.W., Nov. 11, 1886.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

ANOSIA PLEXIPPUS IN PEMBROKESHIRE.—I suppose that every new locality for this butterfly must be interesting to entomologists; I therefore trouble you with an account of its capture in quite a new place. A young friend of mine, Mr. T. Mousley, jun., was shooting on Lord Cawdor's estate in this parish, towards the end of last September, when he observed a large butterfly of unusual appearance flying across a stubble-field. He is not an entomologist, but perceiving that the insect was something uncommon at once gave chase, and with the assistance of a keeper and another man succeeded in capturing it. He had not heard of the various appearances during past years of *A. plexippus* in this country; but being certain that there was something uncommon about this insect he mentioned it to me. From his description I felt sure that it must be our new species, and asked him to show it to me. He brought it over one day last month, and I was much pleased to find that it was a very fine specimen of *A. plexippus*. It had been in the finest condition, but the tip of one of the fore wings was a little damaged in capturing it. Knowing me to be a collector he very kindly presented his prize to me, and now it adorns my cabinet. I may add that two sides of this parish are washed by the Atlantic, and the place of

capture is about two miles from the coast. It thus resembles very much the Cornish localities for this insect.—CLENELL WILKINSON; Castlemartin Vicarage, Pembroke, Nov. 16, 1886.

EPINEPHELE IANIRA *var.* HISPULLA AT HAYLING ISLAND.—Mr. W. Butler, of this town, has shown me a variety of a female *Epinephele ianira*, taken by him last July at Hayling Island. The primaries are suffused with fulvous colouring to such an extent that, had the specimen come from a more southern latitude, I should have felt no hesitation in naming it *var. hispulla*, Hüb. I think this varietal name might be added to the British list.—H. C. LANG; Western Elms Cottage, Reading, Berks, November 22, 1886.

COLIAS EDUSA.—The following records have been received of the occurrence during the past season of *Colias edusa*.—J. T. C.

I took a male specimen of *Colias edusa* here on August 31st last. It was so much worn as to suggest the idea of its having hibernated for two or three seasons. I never remember a year so devoid of butterflies, even of the commonest species. I did not see a single *Vanessa cardui*.—JOSEPH ANDERSON, jun.; Chichester.

As this insect appears to have been scarce during the past season, it may be of interest to record the capture of a fine specimen at Mumbles, near Swansea, on August 24th.—C. J. WAINWRIGHT; 147, Wall Road, Wandsworth Common, Nov. 9.

THE VANESSIDÆ IN THE MIDLANDS.—It seems strange that in the Forest of Wyre, in Worcester, where the Vanessidæ are usually to be met with in great abundance, there is an almost entire absence of nettles. On the other hand, it is still more astonishing that in the Valley of the Tame, where nettles are exceedingly luxuriant and plentiful, the Vanessidæ are comparatively scarce.—W. HARCOURT BATH; Birmingham, Oct. 9.

UNUSUAL ABUNDANCE OF THE LARVA OF PIERIS BRASSICÆ.—Have any readers of the 'Entomologist' observed the larvæ of *Pieris brassicæ* in greater numbers than usual this year? For my part, I hardly ever remember having seen them in such extraordinary abundance, unless it was in the autumn of 1884, when they appeared in great plenty, but in nothing like the numbers of this season. I was staying at Groombridge during August and also the greater part of last month, and first observed some larvæ in a garden on September 11th. In this garden there

was a very small piece of ground planted with broccoli, and on these plants the larvæ were swarming in all stages of growth. The damage done was most apparent, as nearly every broccoli appeared reduced to a mere skeleton. I am sure that I could have obtained thousands and thousands of larvæ had I been so inclined. After this I made enquiries, and also visited several gardens in different places, with the result that everywhere the larvæ were equally abundant. In the districts round this village (Lindfield) I have ascertained that the larvæ have done serious mischief this autumn, having appeared in immense numbers nearly everywhere. The larvæ have been pupating during the last few weeks, and are still doing so; and I have noticed that a very large percentage are attacked by *Microgaster glomeratus*, whose small yellow cocoons are appearing on walls, &c., up which the larvæ are crawling. The question now arises—Wherefore this extreme plentifulness of these larvæ this year? I had always been inclined to believe that a dry summer was best suited to their growth and development, but it can hardly be said that the summer we have just experienced has been anything like a dry one on the whole. I am rather of opinion that the scarcity or abundance of the larvæ depends a good deal on the weather being unfavourable or favourable to the development of the parasite, and also on the weather experienced in some seasons being more suitable than in others, for the successful growth of the larva of the butterfly itself. However, be the cause whatever it may, there is still a great deal to be found out concerning these mysterious and sudden appearances of the larvæ in such quantities in certain seasons, when in others they are comparatively scarce; and it would therefore be interesting to hear the opinion of others on the subject. I may add that *P. brassicæ* has, as far as my experience goes, been very scarce indeed in the imago this summer. I have seen but very few on the wing, not more perhaps than fifteen or sixteen specimens the whole summer.—W. H. BLABER; Beckworth, Lindfield, Sussex, Oct. 18, 1886.

SPHINGIDÆ IN SUSSEX.—In the October issue of this magazine I see only one recorded capture of *Sphinx convolvuli*, and as entomologists seem to think that a good year for this insect must be followed by a bad one, perhaps your readers will be interested by the following notes. In the spring I had my garden planted with such flowers as are supposed to be attractive

to this *Sphinx*, and during most suitable nights in September I watched likely patches of bloom. The first I noticed on Sept. 12th, and I took a specimen at dusk the next day. During the moonlight nights in the middle of September *convolvuli* invariably appeared just before the moon rose, in addition to their twilight feed. The latest I noticed at 11 p.m. Though attracted by light they would not feed by it, and I had better success in seeing, or rather hearing, them without a light. I could always tell when one was about by the loud whirr of its wings, and noticed that they invariably explored to leeward of a flower, but before feeding. I did not obtain more than three specimens, so interesting was their mode of feeding, &c., but a friend who resides about a quarter of a mile from me took one and knocked over another. He also described what I think must have been *Chærocampa celerio*, which he struck at, and as I captured a specimen, the only one I saw, on the 29th of September, with distinct marks of a blow on its thorax, my idea is borne out. During most nights in September I saw *convolvuli*; neither cold nor wind seemed to affect them. Indeed, one was literally blown into a bed of phlox during the hot wind of October 1st. The first male that I noticed was on the 29th, all the earlier specimens appearing to be females. At the slightest movement *S. convolvuli* disappears, and if struck at is gone for the night. Other people in the neighbourhood have noticed them this year, and one non-entomological friend, who resides two miles from me, told me that two moths as "big as blackbirds," tried to get through the window at him. I should be much obliged if any of your correspondents would give me any hints about finding the caterpillars, as, though I offered hedgers, harvesters, &c., a shilling each for all "grubs" found over a certain size, I did not succeed in getting a larva of *S. convolvuli*. Since writing the above on the 4th inst., *S. convolvuli* has turned up in great abundance, and I have taken eight more specimens; and one other good example of *C. celerio*.—DOVER C. EDGELL; Firle, Lewes, October 8, 1886.

SPHINX CONVULVULI.—On the 28th of September I found a perfect specimen of *Sphinx convolvuli* at rest on a fence in the neighbourhood of Blackheath.—G. SHUTE, jun.; 14, Crooms Hill, Greenwich, S.E.

ON BREEDING VARIETIES OF *ANGERONA PRUNARIA*. — Continuing my observations on this subject (Entom. xviii. 254), I regret that of the fifty larva referred to I only succeeded in bringing to maturity a single example of *A. prunaria*, whose progenitors were the speckled variety of the female and the orange-banded variety of the male already described. This example proved to be a palish and somewhat degenerated female of the ordinary variety of that sex, of the fourth and inbred from the third generation. This degeneration evidently arose from two causes, *viz.*, interbreeding, and an enfeebled condition of the female—the latter cause resulting from some hesitation on my part whether to kill the insect for the cabinet or run the risk of spoiling the specimen in experimenting with it. Thus I conclude that had the female been unimpaired, the results of interbreeding would at this stage have been scarcely, if at all, apparent, and the fifth generation attained without any very sensible diminution in the size and vigour of the race. On the other hand, in the absence of an infusion of new blood, the effects of interbreeding with this insect would be no doubt apparent in the third and decided in the fourth generation, even were the interbreeding to take place under the most favourable conditions. Though the continuity of my experiments have been interfered with, I am happy to say that through the kindness of a friend, to whom I had given a brood of the larvæ of this moth in March, 1885, I have been enabled this year to resume experiments; but another season, or perhaps two, must necessarily elapse, before I can look for notable aberrations or new varieties—ordinary varieties only having resulted from the resumption of experiments. Of these varieties I effected pairings as follows:—ordinary female with speckled variety of male; ordinary female with orange-banded variety of male. I should mention that, owing to a considerable interval, about three weeks, elapsing between the emergence of the moths from which the above-mentioned pairings were effected, and the single experiment—remnant of the first series of experiments—I was not able to affect a pairing with the latter. I am, however, still in hopes, at no very distant date, of being enabled to record the variation looked for.—GEO. J. GRAPES; 2, Buckleigh Road, Streatham Common, S.W.

TEPHROSIA CREPUSCULARIA EMERGING IN OCTOBER.—In the month of July last I took a female of the above species in the

New Forest. From this insect I obtained a batch of ova, which hatched in about fourteen day's time; the larvæ duly pupated, having been fed on plum. On the 12th of October I was astonished to find that a perfect insect had emerged from one of these pupæ. Up to this time no more imagos have appeared, so it would seem that the rest of the brood intend to remain in the pupa-state for the usual length of time. The pupæ have not been "forced" in any way.—E. W. H. BLAGG; Cheadle, Staffordshire, November 8, 1886.

PÆDISCA (MIXODIA) RATZEBURGHIANA IN SURREY.—Working among spruce in a wood at Addington, on the 23rd of last July, I captured three specimens of a Tortrix, which I did not at the time recognise. A few days ago, on going through the Doubleday Collection, I found they were *Pædisca ratzeburghiana*. This northern species is not included by the late W. P. Weston in his list of Tortrices of Surrey, Kent, and Sussex; and does not appear to have been hitherto recorded from this county.—W. G. SHELDON; Rose Cottage, Oval Road, Addiscombe, Surrey, October 22, 1886.

UCHSENHEIMERIA VACCULELLA.—This insect has hitherto been considered a rarity, having managed to keep itself hid away from the prying eyes of the entomologist; but it seems now to have turned up in almost incredible numbers, not in any one particular place, but apparently all over the country. I have for many years past found a few specimens of *Laverna stephensiella* on one or two large oaks in our forest; and on searching last year for this insect I met with *O. vacculella* for the first time. Thinking its larva possibly might have fed under the bark, I went down in the early part of last July and collected a large bagful of the bark, with its usual abundance of webs and rubbish. I examined it carefully day by day, but no moths emerged from it. In the middle of July I again visited the trees, and was surprised to find *vacculella* in plenty, twenty-seven being captured in about an hour, with ten *L. stephensiella* and two *Sesia asiliformis (cynipiforme)* (one drying its wings), when I was compelled to leave to meet my train. I believe I could have taken any quantity of *vacculella* had I not been limited to time. The life-history of this insect at present remains a mystery; probably its larva, when discovered, will prove, like others of the genus, to be a

grass-feeder.—WILLIAM MACHIN; 29, Carlton Road, Carlton Square, E., November 5, 1886.

PSYCHE OPACELLA AT RANNOCH.—I got in Rannoch, this season, a specimen of *Psyche opacella*, in good condition. Is it not rather a rarity, and generally found in the New Forest? I never met with it before in Rannoch. I also took *Stilbia anomala* there—for the first time since 1868 or '69. —ELIZABETH CROSS; The Vicarage, Appleby, Doncaster, October 19, 1886.

PTOCHEUUSA (GELECHIA) SUBOCELLEA FEEDING ON THYME.—I have received from Mr. J. H. Wood, of Tarrington, *Ptocheuusa* (*Gelechia*) *subocellea* cases infested by a Chalcid, with a remark, "The cases were abundant on wild thyme, but the great majority stung." The larvæ attacked are only about half-grown, consequently the larva-cases are small, but, notwithstanding, they are very conspicuous on the withered flowering stems. The end of the case, from which the larva protruded its head, is affixed to the calyx of the seed-pod from which it made its last meal. I do not remember seeing it mentioned before that *P. subocellea* fed on the seeds of the thyme as well as marjorum.—G. C. BIGNELL; Stonehouse, Plymouth, October 9, 1886.

WHAT CONSTITUTES A SPECIES?—I should like to be allowed to say a few words with regard to Mr. South's statement as to what constitutes a species. I don't think entomologists are so much at a deadlock as he seems to think, with regard to their ideas of what constitutes a species (Entom. 270); and the important factor to me seems to be, will the individual copulate freely in a state of nature, to propagate their own particular kind? If so, however variable the forms may be, I think it is generally recognised that the progeny form but one species; and I believe I am quite safe in saying that this is the chief point in the minds of most entomologists. If this be so, I must ask Mr. South one question. Has he or any careful observer ever seen an undoubted specimen of the early brood which we call *crepuscularia* in copulation with an undoubted specimen of the late brood which we call *biundularia*? Only this year we had a notice chronicled in the 'Entomologist' of their occurrence at the same time. I have noticed the same thing myself, but I never saw copulation take place, and as we get some strange cases of unnatural copulation noticed at times, it seems strange

that two similar insects occurring in the same woods, often at the same time, should never copulate. The individuals surely recognize a difference that many entomologists fail to see, that nature has separated them widely and distinctly, and that they have nothing in common, although they bear a superficial resemblance to each other. Of course we are all aware that insects do copulate at times in a very erratic manner; we hear of *Diurni* copulating with *Pyrales*, and *Bombyces* with *Noctuæ*, but such cases are so exceptional that they may be set aside. The copulation of allied species is more common, but really, considering the number of insects, and the close alliance undoubtedly existing between many of them, the number is still very small, and nature rarely seems to deviate from her general paths. I have never myself seen a case of copulation between different recognized species, except with *Agrotis nigricans* and *A. tritici*, and then only in about ten instances out of some hundreds of insects thus noticed, and I would not like to stake much on the identity of all these *Agrotis nigricans*. There seems to be little doubt that the Scotch *Tephrosia* from Perth is identical with our southern *crepuscularia*. A series I have received from Messrs. Lawson and Macgregor are exceedingly fine, and the latter gentleman has kindly sent me a pair taken in copulation on April 8th, the male a finely-marked typical specimen, the female a pale, well-marked specimen, coinciding exactly in size and colour with the July brood. It seems to me remarkable and worthy of notice that so far north, where *crepuscularia* is only single-brooded, a small percentage of the progeny apparently assume the size and superficial resemblance of our southern July brood. I think Mr. South must go further than he does to find the differences we cannot agree upon.—J. TUTT; Blackheath.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*November 3rd, 1886.*
—Robert McLachlan, Esq., F.R.S., President, in the chair. The following gentlemen were elected Fellows, *viz.*, Mr. Peter Cameron, of Sale, Cheshire; Mr. F. Archer, of Crosby, Liverpool; Mr. H. J. S. Pryer, of Yokohama, Japan; Mr. H. Norris, of St. Ives, Hunts; Mr. N. P. Fenwick, of Surbiton Hill; Mr. John Brown, of Cambridge; Mr. J. Tutt, of Blackheath;

and Mr. A. P. Green, of Colombo, Ceylon. Mr. E. B. Poulton exhibited a mass of minute crystals of formate of lead, caused by the action of the secretion of the larva of *Dicranura vinula* upon suboxide of lead. He stated that a single drop of the secretion had produced the crystals which were exhibited; and he called attention to the excessively high percentage of formic acid which must be present in the secretion, and to the pain, and probable danger, which would result from being struck in the eye by the fluid which the larva had the power of ejecting to a considerable distance. A discussion ensued, in which Messrs. White, Kirby, Slater and others took part. Mr. S. Stevens exhibited a specimen of *Laphygma exigua*, recently captured by Mr. Rogers in the Isle of Wight. Mr. W. F. Kirby exhibited, and read notes on, a specimen of *Perilampus maurus*, Walk., recently bred by Mr. Walter de Rothschild from *Antheræa tirrhea*, Cram., one of the rarer South African *Saturnidæ*. Mr. T. W. Hall exhibited a number of specimens of *Xanthia fulvago* (*cerago*), somewhat remarkable in their variation, and showing a graduated series, extending from the pale variety *flavescens* of Esper, to an almost melanic form. Mr. W. C. Boyd exhibited, and made remarks on, the larva of a species of *Ornithoptera* from New Guinea. Mr. H. Goss exhibited a series of *Bankia argentula* collected in Cambridgeshire, in June last; and also, for comparison, a series of specimens of the same species taken at Killarney in June, 1877. It appeared that the Irish form of the species was larger and more brightly coloured than the English form. Mr. Eland Shaw exhibited a female specimen of *Decticus verrucivorus* (Linn.), taken in July last, at St. Margaret's Bay, Kent. Mr. Waterhouse recorded the recent capture of *Deiopeia pulchella* at Ramsgate, by Mr. Buckmaster; and the capture of *Anosia plexippus* at Gibraltar was also announced. Mr. J. W. Slater read a paper on "The Relations of Insects to Flowers," in which he stated that many flowers which gave off agreeable odours appeared not so attractive to insects as some other less fragrant species; and he stated that Petunias, according to his observations, were comparatively neglected by bees, butterflies and Diptera. Mr. Distant, Mr. Stainton, Mr. Weir, Mr. Stevens and the President took part in the discussion which ensued, and stated that in their experience Petunias were often most attractive to insects. Mr. Stainton referred to the

capture by himself, of sixteen specimens of *Sphinx convolvuli* at the flowers of Petunias, in one evening in 1846. Jonkeer May, the Dutch Consul-General, asked whether the reported occurrence of the Hessian Fly (*Cecidomyia destructor*) in England had been confirmed. In reply Mr. McLachlan stated he believed that several examples of an insect thought to be the Hessian Fly had been bred in this country, but that everything depended upon correct specific determination in such an obscure and difficult genus as *Cecidomyia*.—H. Goss, *Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—November 4, 1886. The President in the chair.—Mr. E. Sabine was elected a member. Mr. Billups exhibited seven male specimens of *Halictus xanthopus* from Reigate, and contributed notes. Mr. A. E. Cook, *Vanessa C-album*, from Wales. Mr. Jager, a variety of *Hypsipetes ruberata*, from Brockenhurst, Mr. Sheldon, dark forms of *H. sordidata*, from Cadger Moss, Lanarkshire. Mr. T. W. Hall, *Cerastis vaccinii* and *C. spadicea*, and contributed notes. Mr. J. T. Carrington, six of the spurious varieties of *Vanessa urticæ* referred to at the last meeting of the Society as having been offered for sale. Mr. R. South, *Cynophos obscuraria*, from Folkestone, the New Forest, Perthshire, North Devon, and Lewes, and read a short paper thereon. Mr. Rose, *Lycæna virgaureæ*, captured by himself in Norway; varieties of *Boarmia repandata* from the Isle of Wight and the Lake District, also *Nudaria mundana*, L., and contributed notes. Mr. Adkin, *Euchelia jacobææ*, in one specimen the red markings being absent from the right wing. Mr. Chaney, the following Coleoptera: *Sphodrus leucophthalmus*, from Peckham; *Molytes germanus*, *Agabus nitidus*, from Sandown, and *Barynotus mærens*, from West Horsley. Mr. Billups, Orthoptera: *Gomphoceris rufus*, Ch., from Reigate. Hemiptera: *Corimelena scarabæoides* and *Sehirus moris*, both from Reigate.

November 18th, 1886. The President in the chair.—Messrs. W. F. Blandford and Mullins were elected members. Mr. T. R. Billups exhibited a female specimen of *Prosopis punctulatissima*, taken at South Hayling, June, 1886, and stated that this very rare short-tongued bee had hitherto been recorded from Birch Wood, Kent, where it was taken some twenty-five years since by the late Mr. F. Smith; also two drawers of Ichneumonidæ,

showing his improved system of mounting these very fragile insects, and the method of labelling obviating the keeping of a journal. Mr. Billups's setting caused general admiration. Among many other exhibits, Mr. R. South showed three instances in the colouration of the female of *Lycæna icarus* and *L. bellargus*, a variety of the latter species coming close to the var. *ceronus*, but wanting the orange spots on the fore wings; had these been present Mr. South said it would have exactly corresponded with the var. of *icarus* shown by its side. There was also a curious form of the male of *Lycæna corydon*, with distinct ocelli on the fore wings, and a specimen of *L. icarus* from the Isle of Hoy, having a strong tinge of the *bellargus* blue on the inferior wings.

November 25th. Annual Exhibition.—The Exhibition was held at the Bridge House Hotel, London Bridge; the exhibits, which were contributed by over ninety members and friends, being representative of most of the divisions of the animal and vegetable kingdoms. Among those exhibiting in the class Insecta were Mr. McLachlan, with Exotic Neuroptera (dragon-flies, ant-lions, &c.), and jumping seeds from Mexico containing larvæ of *Carpocapsa saltitans*. Mr. J. J. Weir, his collection of *Argynnis paphia* and other Argynnidæ; exotic silk-worm moths, &c., and numerous species of Cicadidæ. The Zoological Society, various species of *Attacus*, including *atlas*; South African Bombyces, and various species of *Papilio*, among which were *P. podalirius*, *P. demoleus*, *P. ajax*, &c.; the whole of the insects shown having been reared in the gardens of the Society. Mr. R. Adkin, British Rhopalocera, Sphinges and Bombyces; also Pterophori and Tortrices taken or bred during the year, varieties of *Sarothripus undulatus*, &c., and *Diasemia literata*. Mr. W. Farren, of Cambridge, *Bryophila impar*, varieties of *Acidalia rubiginata* (*rubricata*), &c., and a water-colour drawing of *Papilio machaon*, showing the complete life-history. Mr. L. Gibb, *Zygæna exulans* var. *subochracea*, from Braemar. Mr. Harwood, of Colchester, a variety of *Arctia villica* having the right fore wing black and the other three wings normal. Mr. Murray, of Carnforth, six specimens of *Cidaria reticulata*, from larvæ found upon *Impatiens noli-me-tangere*. Mr. R. South, his almost complete collection of British Crambi, Pterophoridæ, and Pyralidæ. Dr. P. Rendall, British specimens of *Vanessa*

antiopa, *Noctua conflua*, *Laphygma exigua*, &c. Mr. W. Warren, *Bryophila impar* and yellow forms of *B. perla*. Mr. J. Jager, *Callimorpha hera* and var. *lutescens*, from South Devon. Mr. G. P. Shearwood, three drawers of preserved larvæ and imagines. Mr. J. R. Wellman, a portion of his collection of British Nocturni, Geometræ and Noctuæ; also a box containing three broods of *Acidalia emarginata*. Mr. J. T. Williams, three drawers containing some interesting varieties, including *Abraxas grossulariata*, &c., *Drepana harpagula* (*sicula*) from Bristol, *Amphidasys betularia* var. *doubledayaria*, &c. Mr. Adye, of Christchurch, an interesting variety of *Epinephele ianira*, *Chærocampa celerio*, taken at Christchurch, 1885, and numerous other species and varieties. Mr. E. Anderson, life-histories of British Lepidoptera, including *Trochilium crabroniformis* and other wood-boring larvæ. Mr. J. A. Cooper, *Phorodesma smaragdaria* and living larvæ of the same species; also *Erastria venustula*. Mr. Jobson also exhibited *P. smaragdaria* and other species. Mr. G. Elisha, seven drawers of his collection of the British Tineina, the one of *Coleophora* being very fine; also a drawer of preserved larvæ and pupæ. Mr. Goldthwaite, *Sphinx convolvuli*, &c. Mr. F. Barclay, *Chærocampa celerio*, *Pachetra leucophæa*, &c. Mr. J. Knight, a selection from the Nocturni, Cuspidatæ and Noctuæ; among the species shown were hybrids between *Smerinthus populi* and *S. ocellatus*, a specimen of *Sesia andreniformis*. Also British and foreign pupæ. Mr. W. H. Tugwell, drawers of British Lepidoptera, containing the Nocturni, *Macroglossa* to *Setina*, including the only known British specimen of *Syntomis phegea* and numerous forms and varieties. Mr. J. W. Tutt, comparative series of Agrotidæ and *Tephrosia crepuscularia* and *T. biundularia*, and a series of the last named from Mr. Harrison, of Barnsley. Mr. C. H. Williams, some interesting life-histories, *Eriogaster lanestris*, on the silken web spun by the larvæ, *Dasychira fascelina*, *Agrotis præcox*, &c. Mrs. Hutchison, examples of three broods of *Vanessa C-album*, and a *Eupithecia* apparently new to Britain. Mr. J. Smith, a white variety of *Lasiocampa quercifolia*, and a pretty variety of *Bapta temerata*, &c. Mr. A. Bliss, Exotic Lepidoptera, &c., from the district of the Formosa River and from Darjeeling. Mr. J. S. Sequeira, Lepidoptera from Central America. Mr. S. Edwards, exotic Lepidoptera and Coleoptera. Messrs. Carpenter, Hall,

Levett, Ellison, Joy, Watson, Helps, Fremlin, Oldham, Hickling, McDonald, and others, also exhibited Lepidoptera. Mr. Billups, British and Exotic Coleoptera, British Hemiptera, Hymenoptera Aculeata, Ichneumonidæ and Diptera; the new method of setting and labelling the Hymenoptera attracting considerable attention. Mr. F. Grut, Exotic Coleoptera. Mr. E. Shaw, some recently captured British Orthoptera, many of them from south-eastern localities. Mr. West (Greenwich), twelve drawers of British Coleoptera, the whole forming a very fine collection. There were a large number of microscopes showing the smaller forms of life.—H. W. BARKER, *Hon Sec.*

REVIEWS.

Fourth Report of the United States Entomological Commission.
By CHARLES V. RILEY, Ph.D. Washington. 1885.

THIS fourth report, issued by the U. S. Department of Agriculture, contains the final report on the cotton-worm, together with a chapter on the boll-worm. These are the chief enemies of the cotton plant, but Dr. Riley tells us that "a good deal of material has been collected bearing on these other insects affecting the plant, and we hope some day to find time to prepare it for publication."

To take the lesser enemy first, Chapter XVI. treats of the boll-worm as a cotton enemy. This is the cosmopolitan and almost polyphagous, though rare to Britain, *Heliothis armigera*, which everywhere appears to be destructive where abundant. Its larva is a grass, leaf, stem, or fruit feeder, being especially partial to the ears of maize, the fruit of the tomato, and the boll of the cotton plant; its attacks on the garden geranium only appear to have become known in the States last year through a Denver correspondent ('Report,' p. 363): we were nine years before them in this direction (see Entom. ix. 261, x. 283). In the southern portions of the cotton belt this species appears to have five broods in the year, a prolific and troublesome enemy to deal with.

The cotton-worm report is extremely exhaustive, and we are told in the introduction that it was virtually finished at the end of 1882, before the preparation of the third report, but its appearance was delayed from various causes. It carries the

history of *Aletia xyliana*, Say. (? *argillacea*, Hübn.), much further in many directions, especially in its practical application. That the insect is worthy of a special report on account of its destructiveness is abundantly evidenced by the statistics given in Chapter I., where we read that "the average annual loss may safely be put down at about 15,000,000 dols. for all the cotton States for the fourteen years following the war"; in a year of bad attack this loss has been doubled.

The natural history, chronology, geographical distribution, parasites, and anatomy of this destructive Noctua are fully treated of in the first five chapters; then follows an instructive account of the general features of the cotton belt by Professor Eugene A. Smith. Chapter VII. treats of the terrestrial and meteorological influences affecting the worm, and contains much useful local information. Many instances of erroneous opinions as to hybernation being firmly held by intelligent planters are given (pp. 16—22), and from experience in this country can well be believed.

Chapter VIII. gives a full and well-illustrated account of the natural enemies, which are particularly numerous considering that not a single true parasite of *Aletia* had been recorded by name when the special investigation began; now we know of one parasite being bred from the egg, six from the larva, and five from the pupa. The account of a Cynipid (*Hexaplasta zigzag*, Riley) being a parasite of the dipterous *Phora aletiae* is interesting and unusual.

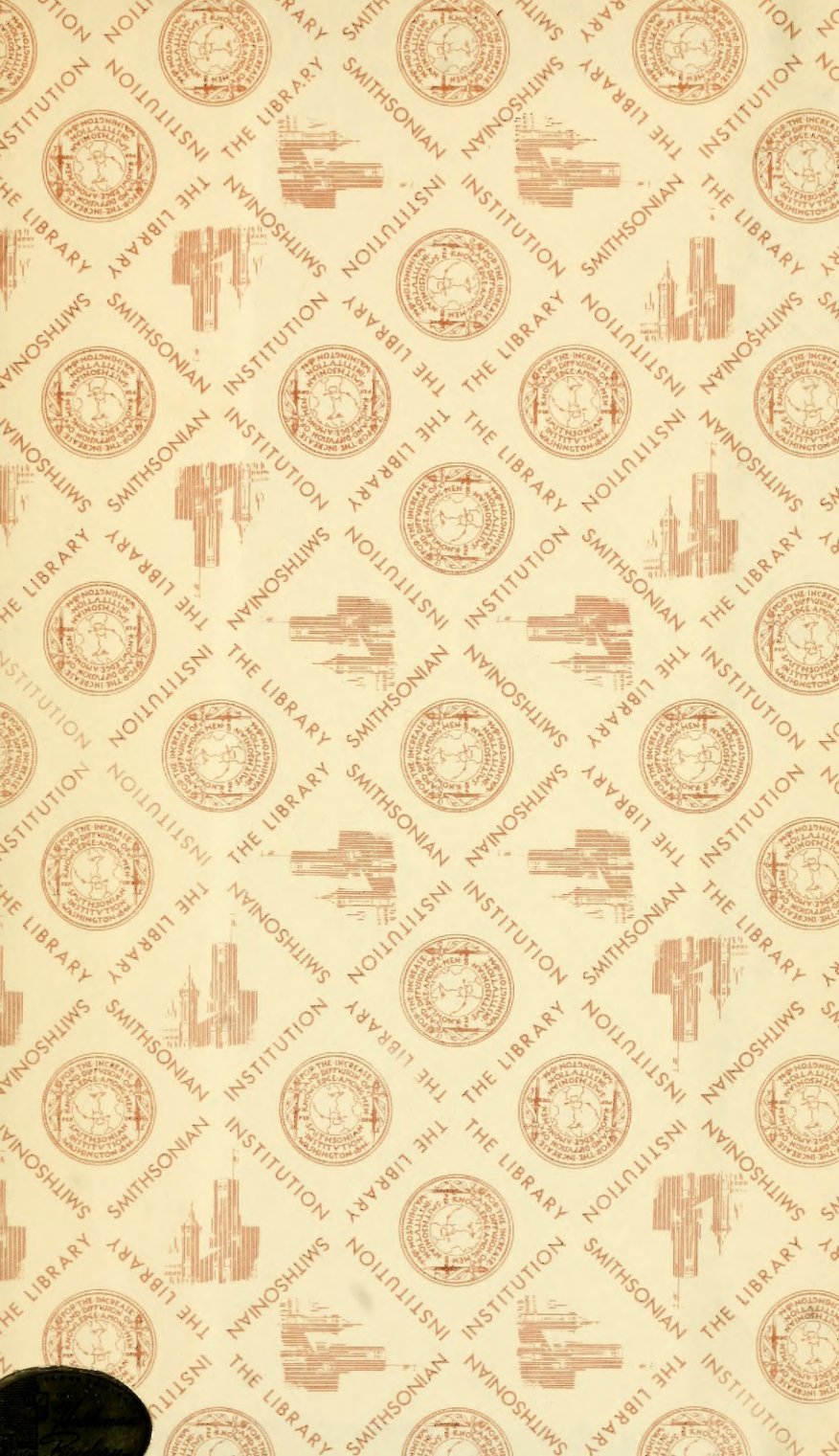
The next two hundred pages are devoted to different preventive measures, remedies and methods of destruction, some of which are very ingenious and doubtless well capable of further extension, but any wide application of others would appear futile or impossible; still it is well that all should be mentioned, for, as we are told by Dr. Riley in his preface, "he has also endeavoured to bear constantly in mind that the chief object which Congress had in ordering the investigation was a practical one, and that whatever purely entomological knowledge was acquired, however interesting to the naturalist, was of less moment, unless it had some bearing on this practical phase of the subject." So it should be, and so doubtless the large amounts voted by Congress will be considered to have been well spent: as far as we can see the work has certainly been thoroughly done and it has been

well done. The vast amount of information contained in this bulky and well-turned-out volume (comprising 585 demy 8vo pages, illustrated with two coloured maps and sixty-four plates, thirteen of which are coloured) cannot fail to be of great practical value to those interested in cotton culture.—E. A. F.

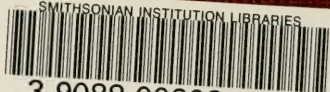
West Sussex Lepidoptera.

THE recently-issued Part (N. S., No. 5) of the 'Transactions of the Chichester and West Sussex Natural History and Microscopical Society' contains a "List of Lepidoptera observed in West Sussex," from the capable pen of Mr. W. H. B. Fletcher, of Worthing. The list includes 35 Rhopalocera, 9 Sphinges, 35 Bombyces, 70 Noctuæ, 98 Geometræ, 28 Pyralides, 12 Pterophori, 19 Crambi, 117 Tortrices, and 239 Tineæ. It is not a mere list of names, for in addition to localities it contains many interesting notes on various species, *e.g.*, the decreasing numbers of *Polyommatus phlæas* is attributed to the habit of farmers pulling the docks when the larvæ are feeding; would that the habit were general! The larvæ of *Lycæna argiolus* "may be taken from umbels of *Cornus sanguinea* by beating or searching for them." Under *Cossus ligniperda* we have, "Saw 105 larvæ taken out of one elm tree at Bersted Lodge, Bognor, one day in January, 1883. Many were taken, by the dozen or score at a time, up to January, 1885, when tree was felled as the best way of destroying the remaining larvæ." The larvæ of *Abraxa grossulariata* are recorded as occurring "in numbers in 1885, on the evergreen *Euonymus japonica*, a rather strange food-plant." *Lobophora polycommata* larvæ "may be found plentifully by hunting for leaves of *Ligustrum vulgare* with ovate pieces eaten from their edges." *Coremia unidentaria*, "the red-banded form (Newman's 'British Moths,' p. 176), is commoner than the black-banded one near Worthing. I referred the former to *C. ferrugata* until in 1886 I bred both forms from eggs laid in 1885 by a specimen of the latter." *Anacamptis anthyllidella*, "The second brood of larvæ feed with the larvæ of *Lycæna minima* (*alsus*) in the pods of *Anthyllis vulneraria*." And so on. Two specimens of *Chærocampa celerio* are recorded from Chichester by Mr. Joseph Anderson, jun., at p. 48. This species is not included in Mr. Fletcher's list.—E. A. F.





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